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Water resources data for the 1973 water year for South Dakota consist of records of discharge and water quality of streams, and water quality of lakes and reservoirs. This report contains water quality for 40 gaging stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating local, State, and Federal agencies in South Dakota.

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1973

Water Resources Data for South Dakota Water Year 1973

Part 2. Water Quality Records

UNITED STATES
DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-73-2

Prepared in cooperation with the State of South Dakota
and with other agencies

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Water Resources Data
for
South Dakota
Water Year 1973

Part 2. Water Quality Records

MARCH 3, 1849

UNITED STATES
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY WATER-DATA REPORT SD-73-2

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East Dakota Conservancy Sub-District
Bureau of Reclamation, U.S. Department of the Interior
Corps of Engineers, U.S. Army
Environmental Protection Agency

Water resources records, 1973, for South Dakota are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for South Dakota
   Part 1. Surface Water Records
2. Water Resources Data for South Dakota
   Part 2. Water Quality Records

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
Room 231, Federal Building
P. O. Box 1412
Huron, South Dakota 57350

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WATER-QUALITY STATIONS IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

[Letters after station name designate type of data:
(c) chemical, (t) water temperature, (s) sediment]

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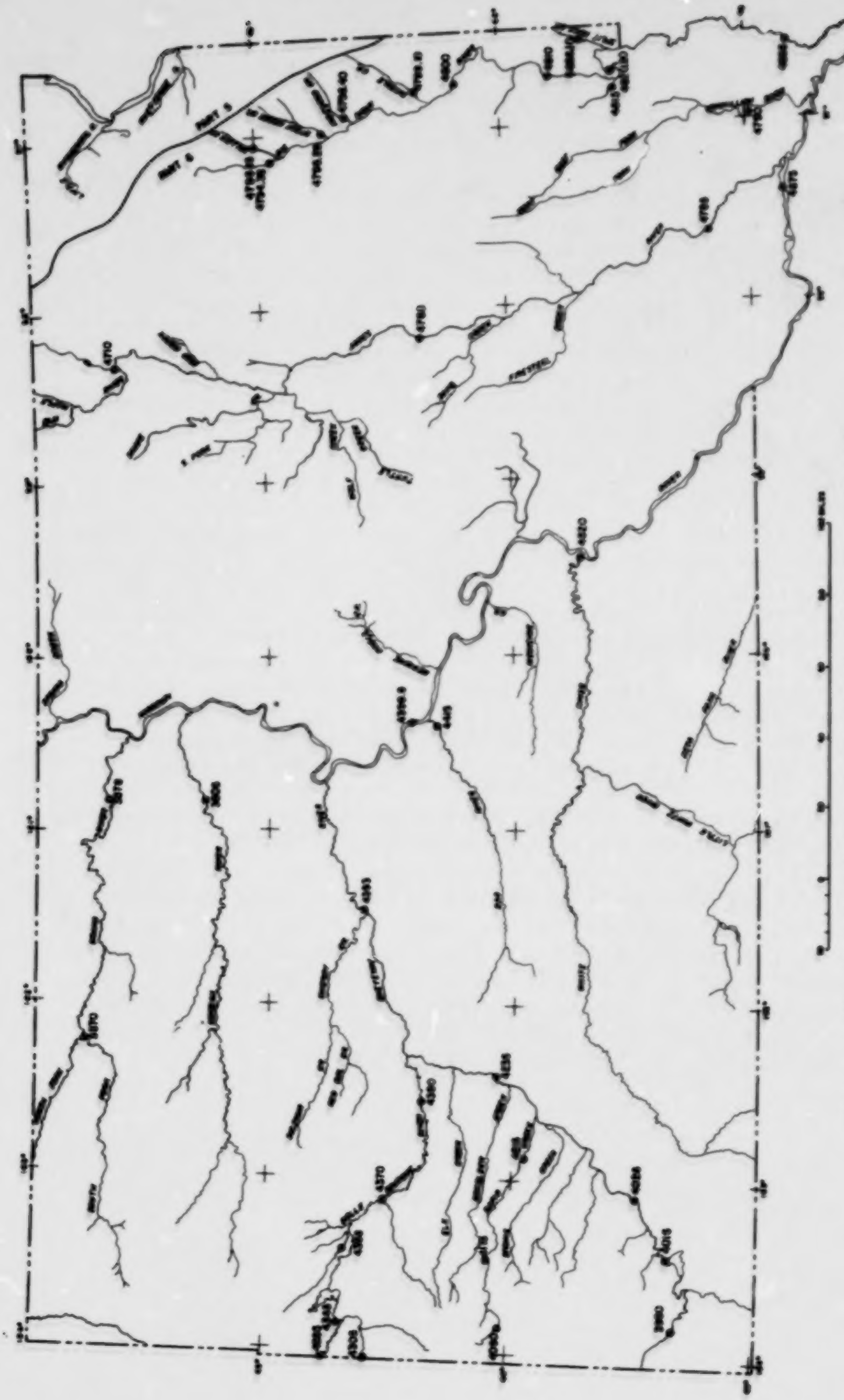

Figure 1. Map of South Dakota showing location of surface-water quality stations

WATER RESOURCES DATA FOR SOUTH DAKOTA, 1973

Part 2. Water Quality Records

by O. J. Larimer and N. F. Leibbrand

INTRODUCTION

Water resources data for the 1973 water year for South Dakota include records of data for the chemical and physical characteristics of surface and ground water. Data on the quality of surface water (chemical, temperature, and sediment) were collected from designated sampling sites at predetermined intervals such as once daily, weekly, monthly or less frequently. Records are given for 36 sampling stations of which 25 are continuous record stations, 9 are partial-record stations, and 2 are miscellaneous sites. Records of chemical analyses also are given for 92 ground-water sites. Locations of surface water-quality stations are shown in figure 1. A few pertinent stations (not included above) in bordering States are also included. The records were collected by the Water Resources Division of the U.S. Geological Survey under the direction of John E. Powell, district chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in South Dakota. South Dakota district personnel who contributed significantly to the collection and preparation of data included in this report were: L. B. Yarger, J. Kume, J. H. Eade, H. L. Dixson, D. W. Heyd, E. B. Hoffman, T. K. Lockner, W. L. Bradford, L. G. Huber, R. C. Ugland, R. C. Beard, and E. M. Decker.

The Geological Survey has published records of chemical quality, water temperatures, and sediment since 1941 in an annual series of water-supply papers entitled, "Quality of Surface Waters of the United States." Beginning with the 1964 water year, water-quality records have been released by the Geological Survey in annual reports on a State-boundary basis. These reports are for limited distribution and are designed primarily for rapid release of data shortly after the end of the water year. These records will be published later in Geological Survey water-supply papers.

COOPERATION

This report was prepared by the U.S. Geological Survey under cooperative agreement with the following organizations:

East Dakota Conservancy Sub-District, J. L. Siegel, manager-engineer.

Agencies furnishing assistance were:

Bureau of Reclamation, U.S. Department of the Interior.
Corps of Engineers, U.S. Army.
Environmental Protection Agency.

Funds for many stations were provided under the Missouri River Basin Development Program for collection of data to meet the needs of several agencies of the Department of the Interior.

DEFINITION OF TERMS

Terms related to water-quality and hydrologic data, as used in this report are defined below. See also table for converting English units to International System of units (SI) on page 18.

Acre-foot (AC-FT, ac-ft) is a quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons.

Bed material is the shifting portion of fragmented alluvial material of which the streambed is composed.

Biochemical oxygen demand (BOD) is the amount of oxygen required by bacteria while stablizing decomposable organic matter under aerobic conditions.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, or about 646,000 gallons, and represents a runoff of approximately 0.0372 inches from 1 square mile.

Chemical oxygen demand (COD) indicates the quantity of oxidizable compounds in water and varies with water composition(s), temperature, period of contact, and other factors.

Coliform organisms are a group of bacteria used as an indicator of the sanitary quality of the water. The number of coliform colonies per 100 milliliters is determined by the immediate or delayed incubation membrane filter method.

Cubic foot per second (cfs, CFS) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

Mean discharge is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Drainage area of a stream at a specified location is that area, measured in horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the river above the specified point.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface stream and bodies of impounded surface water.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

Hardness of water is a physical-chemical characteristic attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as equivalent calcium carbonate ($CaCO_3$).

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per liter (ug/l, UG/L) is a unit expressing the concentration of chemical constituents in solution weight (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (mg/l, MG/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the weight of solute per unit volume of water. Milligrams or micrograms per liter may be converted to milliequivalents (one thousandth of a gram-equivalent weight of a constituent) per liter by multiplying by the factors in table 1, page 5.

Partial-record station is a particular site where limited streamflow or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined either by sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling) (Guy, 1969).

Particle-size classification, used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay..........	0.00024 - 0.004	Sedimentation.
Silt..........	.004 - .062	Sedimentation.
Sand..........	.062 - 2.0	Sedimentation or sieve.
Gravel........	2.0 - 64.0	Sieve.

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis (Guy, 1969).

Plankton is the floating (or weakly swimming) animal or plant life in a body of water consisting chiefly of minute plants (as diatoms and blue-green algae) and of minute animals (as protozoan, entomostracans, and various larvae).

Table 1.--Factors for conversion of chemical constituents in milligrams or micrograms per liter to milliequivalents per liter

Ion	Multiply by	Ion	Multiply by
Aluminum (Al^{+3})*	0.11119	Iodide (I^{-1})	0.00788
Ammonia as NH_4^{+1}	.05544	Iron (Fe^{+3})*	.05372
Barium (Ba^{+2})	.01456	Lead (Pb^{+2})*	.00965
Bicarbonate (HCO_3^{-1})	.01639	Lithium (Li^{+1})*	.14411
Bromide (Br^{-1})	.01251	Magnesium (Mg^{+2})	.08226
Calcium (Ca^{+2})	.04990	Manganese (Mn^{+2})*	.03640
Carbonate (CO_3^{-2})	.03333	Nickel (Ni^{+2})*	.03406
Chloride (Cl^{-1})	.02821	Nitrate (NO_3^{-1})	.01613
Chromium (Cr^{+6})*	.11539	Nitrite (NO_2^{-1})	.02174
Cobalt (Co^{+2})*	.03394	Phosphate (PO_4^{-3})	.03159
Copper (Cu^{+2})*	.03148	Potassium (K^{+1})	.02557
Cyanide (CN^{-1})	.03844	Sodium (Na^{+1})	.04350
Fluoride (F^{-1})	.05264	Strontium (Sr^{+2})*	.02283
Hydrogen (H^{+1})	.99209	Sulfate (SO_4^{-2})	.02082
Hydroxide (OH^{-1})	.05880	Zinc (Zn^{+2})*	.03060

*Constituent reported in micrograms per liter; multiply by factor and divide results by 1,000.

Table 2.--Factors for conversion of sediment concentration in milligrams per liter to parts per million*
(All values calculated to three significant figures)

Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by	Range of concentration in 1000 mg/l	Divide by
0 - 8	1.00	201-217	1.13	411-424	1.26	619-634	1.39
8.05- 24	1.01	218-232	1.14	427-440	1.27	636-650	1.40
24.2 - 40	1.02	234-248	1.15	443-457	1.28	652-666	1.41
40.5 - 56	1.03	250-264	1.16	460-473	1.29	668-682	1.42
56.5 - 72	1.04	266-280	1.17	476-489	1.30	684-698	1.43
72.5 - 88	1.05	282-297	1.18	492-506	1.31	700-715	1.44
88.5 -104	1.06	299-313	1.19	508-522	1.32	717-730	1.45
105 -120	1.07	315-329	1.20	524-538	1.33	732-747	1.46
121 -136	1.08	331-345	1.21	540-554	1.34	749-762	1.47
137 -152	1.09	347-361	1.22	556-570	1.35	765-780	1.48
153 -169	1.10	363-378	1.23	572-585	1.36	782-796	1.49
170 -185	1.11	380-393	1.24	587-602	1.37	798-810	1.50
186 -200	1.12	395-409	1.25	604-617	1.38		

*Based on water density of 1.000 g/ml and a specific gravity of sediment of 2.65.

Sediment is solid material that originates mostly from disintegrated rocks and is transformed by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment discharge is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight, or by volume, that is discharged in a given time. It is computed by multiplying discharge times mg/l times 0.0027.

Total sediment discharge or total sediment load is the sum of the suspended-sediment discharge and the bedload discharge. It is the total quantity of sediment, as measured by dry weight or volume, that is discharged during a given time (Colby and Hembree, 1955).

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/l).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigating farmland.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current and is expressed in micromhos per centimeter at 25°C. Because the specific conductance is related to the number and specific chemical types of ions in solution, it can be used for approximating the dissolved-solids content in the water. Commonly, the amount of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream or from well to well, and it may even vary in the same source with changes in the composition of the water.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff." Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Thermograph is a thermometer that continuously and automatically records, on a chart, the water temperature of a stream. "Temperature recorder" is the term used to indicate the location of the thermograph or a digital mechanism that automatically records water temperature on paper tape.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the water year.

Tons per acre-foot indicates the dry weight of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration in milligrams per liter by 0.00136.

Tons per day is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour day.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges.

A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir. See also table for converting English Units to International Units (SI) on page 18.

SPECIAL NETWORKS AND PROGRAMS

Some of the stations for which data are published in this report are included in special networks and programs. These stations are identified by their title, set in parentheses, under the station name.

Hydrologic bench-mark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a bench-mark station may be used to separate effects of natural from manmade changes in other basins which have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped bench-mark basin.

Pesticide program is a network of regularly sampled water-quality stations where additional monthly samples are collected to determine the concentration and distribution of pesticides in streams whose waters are used for irrigation or in streams in areas where potential contamination could result from the application of the commonly used insecticides and herbicides.

Pesticides are chemical compounds used to control the growth of undesirable plants and animals. Major categories of pesticides includes insecticides, miticides, fungicides, herbicides, and rodenticides. Since the first application of DDT as an insecticide in the early 1930's, there have been almost 60,000 pesticide formulations registered, each containing at least one of the approximately 800 different basic pesticide compounds (Goerlitz and Brown, 1972, p. 24). The United States annually produces about 1 billion pounds of these compounds. Although efforts are being made to substitute many of the chlorinated hydrocarbon pesticides with more specific, fast-acting, and easily degradable compounds, chlorinated hydrocarbon pesticides are still commonly used in many areas of the country.

Radiochemical program is a network of regularly sampled water-quality stations where additional samples are collected twice a year (at high and low flow) to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Radioisotopes are isotope forms of an element that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight, but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus. For example: Ordinary chlorine is a mixture of isotopes having atomic weights 35 and 37, with the natural mixture having atomic weight about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron (Rose, 1966). There are 275 isotopes of the 81 stable elements in addition to over 800 radioactive isotopes.

Radioisotopes that are determined in this program are those of uranium in micrograms per liter, radium as radium-226 in picocuries per liter, gross beta radiation as strontium/yttrium-90 in picocuries per liter, and gross alpha radiation as micrograms of uranium equivalent per liter.

A picocurie (PC/L, pCi/l) is one millionth of the amount of radioactivity represented by a microcurie, which is the quantity of radiation represented by one millionth of a gram of radium-226. A picocurie of radium results in 2.22 disintegration per minute.

DOWNSTREAM ORDER AND STATION NUMBER

Stations are listed in downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Station on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of water-quality stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each water-quality station, gaging station, and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record and continuous-record stations; therefore, the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Water-quality stations located at or near gaging stations or partial-record stations have the same number as the gaging or partial-record station. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive. The complete 8-digit number for each station, such as 06476000 which appears just to left of the station name includes the 2-digit part number "06" plus the 6-digit downstream order number "476000." In this report, the records are listed in downstream order by parts. The part number refers to an area whose boundaries coincide with certain natural drainage lines. Records in this report are in Part 6 (Missouri River basin). All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

Downstream order station numbers are not assigned to sites where only random water-quality samples are taken. These sites are classified as water-quality miscellaneous sites and as a means of location and identification a 15-digit number consisting of the latitude and longitude coordinates to the nearest second for each site plus a 2-digit sequential number are assigned. For example, the station number for a water-quality miscellaneous site with lat 42°28'47", long 071°41'04" would be 422847071410401.

WELL NUMBER

The well numbering system of the U.S. Geological Survey is based on the grid system of latitude and longitude. The number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude, the next 7 digits denote degrees, minutes and seconds of longitude, and the last 2 digits is a sequential number for wells within a 1-second grid. The system provides the geographic location of the well and a unique number for each well. In the event that the latitude-longitude coordinates for a surface-water miscellaneous sampling site and a well site are the same, assign sequential numbers "01,", "02," etc. within the same sequence. See figure 2, below.

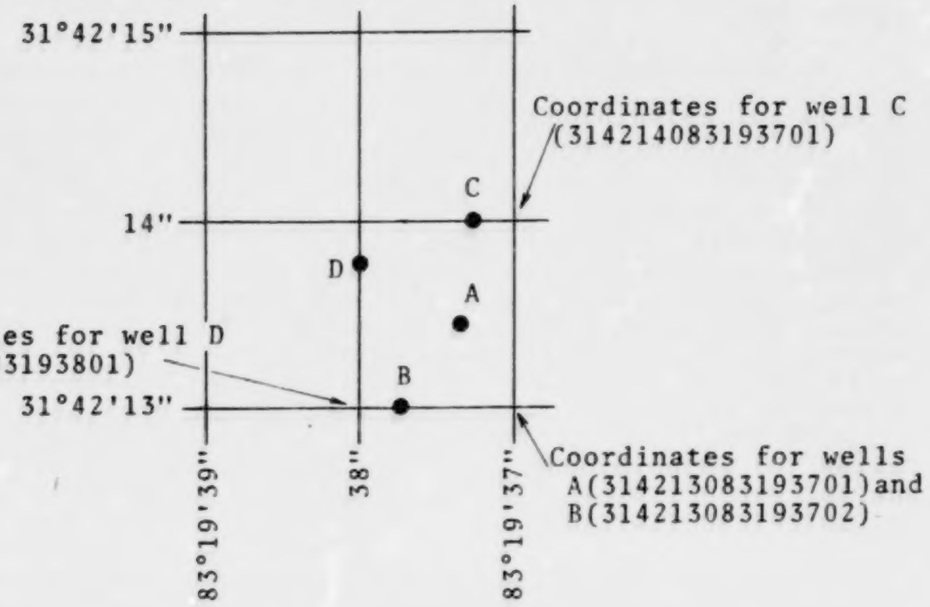
31°42'15"
Coordinates for well C
(314214083193701)
C
14"
D
A
Coordinates for well D
(314213083193801)
B
31°42'13"
83°19'39"
38"
83°19'37"
Coordinates for wells
A(314213083193701)and
B(314213083193702)

Figure 2.--System for numbering wells
(latitude and longitude)

COLLECTION AND EXAMINATION OF DATA

Water samples for analyses usually are collected at or near gaging stations. The discharge records at these stations are used in conjunction with the computations of the chemical constituents and sediment loads. Discharge records for streams in South Dakota have been released in the report, "Water Resources Data for South Dakota, 1973, Part 1. Surface Water Records."

The data in this report include a description of the sampling station and tabulations of the samples analyzed. The description of the sampling station gives the location, drainage area, periods of record for the various water-quality data, extremes of the pertinent data, and general remarks, in a format similar to that used for streamflow gaging stations. For ground-water sampling stations, no descriptive statements are given. However, the well number, depth of well, date of sampling, and other pertinent data are given in the table containing the chemical analyses of ground water.

Water-quality information is presented for chemical quality, biological, microbiological, water temperature, and fluvial sediment. Chemical quality includes concentrations of individual dissolved constituents and certain properties or characteristics such as hardness, sodium adsorption ratio, specific conductance, and pH. The biological information includes qualitative and quantitative analyses of plankton, bottom organisms, and particulate inorganic and amorphous matter present. Microbiological information includes quantitative identification of certain bacteriological indicator organisms. Water-temperature data represent once-daily observations except for stations where a continuous temperature recorder furnishes information from which daily minimums and maximums are obtained. Fluvial-sediment information is given for suspended-sediment discharges and concentrations and for particle-size distribution of suspended sediment and bed material.

Prior to the 1968 water year, data for chemical constituents and concentrations of suspended sediment were reported in parts per million (ppm) and water temperatures were reported in degrees Fahrenheit (°F). In October 1967, the U.S. Geological Survey began reporting data for chemical constituents and concentrations of suspended sediment in milligrams per liter (mg/l) and water temperatures in degrees Celsius (centigrade, °C). In waters with a density of 1.000 g/ml (grams per milliliter), parts per millions and milligrams per liter can be considered equal. In waters with a density greater than 1.000 g/ml, values in parts per million should be multiplied by the density to convert to milligrams per liter. Temperature reported in degrees Celsius may be converted to degrees Fahrenheit by using the table on page 13.

In October 1968, the Geological Survey began reporting many of the chemical constituents as well as the minor elements in micrograms per liter instead of milligrams per liter. (See "Definitions of Terms," p. 4 and table for converting English units to SI units, p. 18.)

Table 3.--Degrees Celsius (°C) to degrees Fahrenheit (°F)*
(Temperature reported to nearest 0.5°C)

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0.0	32	10.0	50	20.0	68	30.0	86	40.0	104
.5	33	10.5	51	20.5	69	30.5	87	40.5	105
1.0	34	11.0	52	21.0	70	31.0	88	41.0	106
1.5	35	11.5	53	21.5	71	31.5	89	41.5	107
2.0	36	12.0	54	22.0	72	32.0	90	42.0	108
2.5	36	12.5	54	22.5	72	32.5	90	42.5	108
3.0	37	13.0	55	23.0	73	33.0	91	43.0	109
3.5	38	13.5	56	23.5	74	33.5	92	43.5	110
4.0	39	14.0	57	24.0	75	34.0	93	44.0	111
4.5	40	14.5	58	24.5	76	34.5	94	44.5	112
5.0	41	15.0	59	25.0	77	35.0	95	45.0	113
5.5	42	15.5	60	25.5	78	35.5	96	45.5	114
6.0	43	16.0	61	26.0	79	36.0	97	46.0	115
6.5	44	16.5	62	26.5	80	36.5	98	46.5	116
7.0	45	17.0	63	27.0	81	37.0	99	47.0	117
7.5	45	17.5	63	27.5	81	37.5	99	47.5	117
8.0	46	18.0	64	28.0	82	38.0	100	48.0	118
8.5	47	18.5	65	28.5	83	38.5	101	48.5	119
9.0	48	19.0	66	29.0	84	39.0	102	49.0	120
9.5	49	19.5	67	29.5	85	39.5	103	49.5	121

*C = 5/9 (°F - 32) or °F = 9/5 (°C) + 32.

Solutes

The methods of collecting and analyzing water samples for determining the kinds and concentrations of solutes are described by Brown, Skougstad, and Fishman (1970). One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge depending on the source of material and the turbulence and the mixing of the stream. Some must be sampled at several verticals across the channel to determine accurately the solute load.

The daily chemical quality data in this report generally represent equal-volume composites for 2- to 30-day periods; the composite periods are selected on the basis of specific conductance of the daily samples and fluctuation of water discharge.

Ground-water does not change significantly during short periods of time; infrequent sampling and analysis of ground water adequately defines ground-water quality at a given site. Water samples from wells are analyzed individually.

Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for surface-water stations. For daily stations, the water temperatures are taken at about the same time each day when sample is collected. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where continuously recording thermographs are present, the records consist of maximum and minimum temperatures for each day and the monthly averages.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross-section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the sub-divided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the sub-divided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included.

WATER-SUPPLY PAPERS

The annual series of water-supply papers that give information on quality of surface waters in South Dakota are shown in the following table.

Table 4.--Water-Supply paper numbers and parts, water years 1947-73

Year	Parts 5-6	Year	Parts 5-6
1947	1102	1968	B2094
1948	1132		C2095
1949	1162	1969	AB2144
1950	1187		AC2145
1951	1198	1970	AB2154
1952	1251		AC2155
1953	1291	1971	AB2164
1954	1351		AC2165
1955	1401	1972	D
1956	1451	1973	D
1957	1521		
1958	1572		
1959	1643		
1960	1743		
1961	1883		
1962	1943		
1963	1949		
1964	1956		
1965	1963		
1966	1993		
1967	2013		

A In press.
B Part 5.
C Part 6.
D Not assigned.

SELECTED REFERENCES

American Public Health Association, and others 1971, Standard methods for the examination of water and wastewater, 13th ed.: Am. Public Health Assoc., New York, 874 p.

Brown, Eugene, Skougstad, M. W., and Fishman, M. J., 1970, methods for collection and analysis of water samples for dissolved minerals and gases: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. A1, 160 p.

Colby, B. R., 1963, Fluvial sediments--a summary of source, transportation, deposition, and measurement of sediment discharge: U.S. Geol. Survey Bull. 1181-A, 47 p.

Colby, B. R., and Hembree, C. H., 1955, Computations of total sediment discharge, Niobrara River near Cody, Nebraska: U.S. Geol. Survey Water-Supply Paper 1357, 187 p.

Colby, B. R., and Hubbell, D. W., 1961, Simplified methods for computing total sediment discharge with the modified Einstein procedure: U.S. Geol. Survey Water-Supply Paper 1593, 17 p.

Goerlitz, D. F., and Brown, Eugene, 1972, Methods for analysis of organic substances in water: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. A3, 40 p.

Guy, H. P., 1970, Fluvial sediment concepts: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. C1, 55 p.

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Guy, H. P., and Norman, V. W., 1970, Field methods for measurement of fluvial sediment: U.S. Geol. Survey Techniques of Water-Resources Inv., book 3, chap. C2, 59 p.

Hem, J. D., 1970, Study and interpretation of the chemical characteristics of natural water, 2d ed.: U.S. Geological Survey Water-Supply Paper 1473, 363 p.

Langbein, W. B., and Iseri, K. T., 1960, General introduction and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.

Porterfield, George, 1972, Computations of fluvial-sediment discharge: U.S. Geol. Survey Techniques of Water Resources Inv., book 3, chap. C3, 66 p.

Ritter, J. R., and Helley, E. J., 1969, Optical method for determining particle sizes of coarse sediment: U.S. Geol. Survey Techniques of Water-Resources Inv., book 5, chap. C3, 33 p (open file).

Rose, Arthur and Elizabeth, 1966, The condensed chemical dictionary: Reinhold Pub. Corp., New York, 7th Ed., p. 257.

U.S. Inter-Agency Committee on Water Resources, Subcommittee on Sedimentation, A study of methods used in measurement and analysis of sediment loads in streams. Published by the St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minn.

_____ 1941, Methods of analyzing sediment samples: Rept. 4.

_____ 1953, Accuracy of sediment size analyses made by the bottom-withdrawal-tube method: Rept. 10.

_____ 1957, The development and calibration of visual accumulation tube: Rept. 11.

_____ 1957, Some fundamentals of particle size analysis: Rept. 12.

_____ 1959, Federal Inter-agency sedimentation instruments and reports: Rept. AA.

_____ 1961, The single stage sampler for suspended sediment: Rept. 13.

_____ 1963, Determinations of fluvial sediment discharge: Rept. 14.

Table 5.--Factors for converting English units to International System (SI) units

The following factors may be used to convert the English units published herein to the International System of Units (SI). Subsequent reports will contain both the English and SI unit equivalents in the station manuscript descriptions until such time that all data will be published in SI units.

Multiply English units	By	To obtain SI units
	Length	
feet (ft)	.3048	meters (m)
miles (mi)	1.609	kilometers (km)
	Area	
acres	4047	square meters (m^2)
	.4047	*hectares (ha)
	.4047	square hectometer (hm^2)
	.004047	square kilometers (km^2)
square miles (mi^2)	2.590	square kilometers (km^2)
	Volume	
cubic feet (ft^3)	28.32	cubic decimeters (dm^3)
	.02832	cubic meters (m^3)
cfs-day (ft^3/s-day)	2447	cubic meters (m^3)
	.002447	cubic hectometers (hm^3)
acre-feet (acre-ft)	1233	cubic meters (m^3)
	.001233	cubic hectometers (hm^3)
	.000001233	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	28.32	liters per second (l/s)
	28.32	cubic decimeters per second (dm^3/s)
	.02832	cubic meters per second (m^3/s)

*The unit hectare is approved for use with the International System (SI) for a limited time. See NBS Special Bulletin 330, p. 15, 1972 edition.

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, S. DAK.

LOCATION.--Lat 45°32'49", long 103°58'23", in SW¼ sec.2, T.18 N., R.1 E., Harding County, at gaging station, on left bank 15 ft (5 m) downstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 mi² (5,100 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1972 to September 1973 (discontinued).
Water temperatures: July 1972 to September 1973 (discontinued).

CHEMICAL ANALYSES, JULY 1972 TO SEPTEMBER 1972

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
JULY 01-31	--	45	9.7	85	37	190	11	256	590	8.6	.6	.34
AUG. 01-31	--	32	7.5	110	45	210	13	227	740	14	.5	.33
SEP. 01-30	--	7.9	4.7	92	41	280	12	342	760	12	.3	.21
TIME WTD. AVG.	--	28.5	7.3	96	41	226	12	274	696	12	.5	.36
ANALYSIS OF ADDITIONAL SAMPLES												
AUG. 02...	1500	29	8.1	98	40	280	9.9	280	610	14	.4	.02

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	9.6	4.6	88	39	290	11	363	720	12	.6	.10
NOV. 01-30	--	9.9	8.1	91	46	300	9.5	400	750	17	.5	.08
DEC. 01-31	--	8.0	11	140	65	360	11	509	1000	26	.6	.09
FEB. 01-28	--	21	7.8	140	58	310	10	439	910	14	.7	.25
MAR. 01-31	--	86	8.1	140	62	340	10	353	950	17	.8	.38
APR. 01-30	--	202	5.6	89	38	170	8.7	224	580	8.7	.6	.13
MAY 01-31	--	104	8.2	100	45	150	10	187	610	7.9	.6	.29
JUNE 01-30	--	368	15	75	37	150	9.7	166	550	5.5	.6	.27
JULY 01-31	--	40	14	95	39	200	11	272	630	9.5	.8	.07
AUG. 01-31	--	5.2	8.5	79	31	270	14	384	560	8.5	.6	.06
SEP. 01-30	--	3.4	6.1	50	21	280	10	449	460	8.0	.6	.11
WTD. AVG.	--	--	11	91	42	187	9.7	224	626	8.6	.6	.22
TIME WTD. AVG.	--	A 77	8.8	99	44	256	10	340	701	12	.6	.19
TOT. LOAD (TONS)	--	--	786	6370	2900	13000	673	15600	43600	996	63	18
ANALYSES OF ADDITIONAL SAMPLES												
OCT. 06...	1500	B 28	3.0	100	42	280	9.6	331	720	13	.5	.00
DEC. 04...	1230	B 7.5	10	140	56	310	8.5	425	900	26	.5	.04
FEB. 05...	1100	B 17	6.3	140	62	290	11	337	950	12	.5	.21
MAR. 07...	1400	B 99	4.7	67	27	120	7.2	163	480	9.3	.4	.10
APR. 04...	1330	B 31	2.9	130	59	220	12	246	840	18	.6	.05
MAY 01...	1200	B 399	5.6	59	32	98	7.3	92	430	4.9	.5	.06
JUNE 06...	1715	B 443	7.1	88	32	97	8.1	75	470	3.3	.5	.08
JULY 02...	1300	B 89	8.5	74	36	120	8.8	147	480	7.0	.6	.08
AUG. 02...	1045	B 18	3.0	130	43	180	11	195	730	18	.5	.02
SEP. 05...	1125	B 3.1	6.8	89	38	270	15	349	670	13	.5	.02

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Mean discharge based on 334 days of chemical analysis; mean discharge for 365 days, 72 cfs.
B Discharge at time of sampling.

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06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, S. DAK.--Continued

EXTREMES.--July 1972 to September 1973:
Dissolved solids : Maximum, 1,860 mg/l Dec. 1-31, 1972; minimum, 926 mg/l June 1-30, 1973.
Hardness: Maximum, 620 mg/l Dec. 1-31, 1972; minimum, 210 mg/l Sept. 1-30, 1972.
Specific conductance: Maximum daily, 3,200 micromhos Jan. 24-26, 1973; minimum daily, 670 micromhos Feb. 20, 26-28, 1973.
Water temperatures: Maximum, 34.0°C Aug. 8, 1972; minimum, freezing point on many days October to February, 1973.

REMARKS.--Daily samples for chemical analysis composited by discharge.

CHEMICAL ANALYSES, JULY 1972 TO SEPTEMBER 1972

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SURP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
JULY 01-31	.06	.07	270	1060	1.44	129	360	150	4.3	1450	8.3	--
AUG. 01-31	.03	.03	330	1250	1.70	108	460	270	4.3	1640	7.9	--
SEP. 01-30	.03	.03	270	1370	1.86	29.2	400	120	6.1	1840	8.0	--
TIME WTD. AVG.	.04	.04	290	1230	1.67	94.6	407	181	4.9	1640	8.1	--
ANALYSIS OF ADDITIONAL SAMPLES												
AUG. 02...	.01	.06	270	1120	1.52	88.9	410	180	4.3	1600	8.2	20.0

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SURP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.03	.03	240	1350	1.84	35.0	380	83	6.5	1610	7.8	--
NOV. 01-30	.01	.02	240	1420	1.93	38.0	420	89	6.4	1940	8.0	--
DEC. 01-31	.01	.02	280	1860	2.53	40.2	620	200	6.3	2450	7.6	--
FEB. 01-28	.02	.03	250	1670	2.27	94.7	590	230	5.6	2250	8.0	--
MAR. 01-31	.03	.04	310	1700	2.31	395	610	320	6.0	2190	8.0	--
APR. 01-30	.05	.06	190	1010	1.37	551	380	200	3.8	1420	8.1	--
MAY 01-31	.03	.04	200	1030	1.40	289	480	280	3.1	1450	7.8	--
JUNE 01-30	.07	.10	220	926	1.26	910	340	200	3.5	1270	7.8	--
JULY 01-31	.05	.07	260	1130	1.54	122	400	170	4.4	1500	8.0	--
AUG. 01-31	.20	.23	270	1160	1.58	16.3	330	10	6.5	1680	8.3	--
SEP. 01-30	.07	.09	210	1060	1.44	9.73	210	0	8.4	1580	8.2	--
WTD. AVG.	.05	.07	224	1090	1.48	--	402	217	4.0	1480	7.9	--
TIME WTD. AVG.	.05	.07	262	1300	1.77	--	429	162	5.5	1760	8.0	--
TOT. LOAD (TONS)	3.1	9.0	16	75700	--	--	--	--	--	--	--	--
ANALYSES OF ADDITIONAL SAMPLES												
OCT. 06...	.04	.22	210	1330	1.81	102	420	150	5.9	1894	8.3	8.0
DEC. 08...	.04	.07	280	1720	2.34	35.2	580	230	5.6	2380	7.5	.0
FEB. 09...	.03	.06	250	1640	2.23	76.6	610	330	5.1	2090	7.9	.0
MAR. 07...	.03	.22	150	717	.98	191	280	140	3.1	1020	7.9	4.5
APR. 04...	.02	.08	280	1400	1.90	119	570	370	4.0	1850	8.1	9.0
MAY 01...	.02	.08	140	683	.93	662	280	200	2.6	967	7.7	10.5
JUNE 06...	.04	1.9	210	739	1.01	888	350	290	2.1	1080	8.1	19.5
JULY 02...	.07	.24	160	808	1.10	195	330	210	2.9	1150	7.9	22.0
AUG. 02...	.08	.07	260	1180	1.60	60.2	500	370	3.5	1630	8.3	21.0
SEP. 06...	.08	.08	250	1270	1.73	10.8	380	92	6.0	1760	8.3	18.5

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), JULY 1972 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	1300	1840	2100
2	---	---	---	---	---	---	---	---	---	1440	1640	2000
3	---	---	---	---	---	---	---	---	---	1570	1660	1980
4	---	---	---	---	---	---	---	---	---	1500	1800	1980
5	---	---	---	---	---	---	---	---	---	1510	1700	1940
6	---	---	---	---	---	---	---	---	---	1500	1700	1980
7	---	---	---	---	---	---	---	---	---	1580	1700	1940
8	---	---	---	---	---	---	---	---	---	1500	1680	1950
9	---	---	---	---	---	---	---	---	---	1550	1800	1950
10	---	---	---	---	---	---	---	---	---	1500	1740	2000
11	---	---	---	---	---	---	---	---	---	1380	1800	2040
12	---	---	---	---	---	---	---	---	---	1620	1800	2000
13	---	---	---	---	---	---	---	---	---	1640	1800	1910
14	---	---	---	---	---	---	---	---	---	1580	1910	1940
15	---	---	---	---	---	---	---	---	---	1630	1840	1860
16	---	---	---	---	---	---	---	---	---	1640	1700	1880
17	---	---	---	---	---	---	---	---	---	1670	1760	1910
18	---	---	---	---	---	---	---	---	---	1680	1680	1900
19	---	---	---	---	---	---	---	---	---	1600	1940	1940
20	---	---	---	---	---	---	---	---	---	1560	1680	1920
21	---	---	---	---	---	---	---	---	---	1520	1670	1960
22	---	---	---	---	---	---	---	---	---	1520	1740	1940
23	---	---	---	---	---	---	---	---	---	1520	1640	1940
24	---	---	---	---	---	---	---	---	---	1510	1560	1930
25	---	---	---	---	---	---	---	---	---	1510	1340	1920
26	---	---	---	---	---	---	---	---	---	1520	1540	1860
27	---	---	---	---	---	---	---	---	---	1620	1760	1920
28	---	---	---	---	---	---	---	---	---	1680	1940	1900
29	---	---	---	---	---	---	---	---	---	1680	2010	1940
30	---	---	---	---	---	---	---	---	---	1740	2060	1940
31	---	---	---	---	---	---	---	---	---	1700	2000	---
AVG	---	---	---	---	---	---	---	---	---	1530	1750	1950

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1900	1960	2250	2400	2240	1060	1670	900	1480	1400	1610	1550
2	1920	1960	2550	2360	2230	1050	1680	900	1300	1400	1670	1550
3	1900	1930	2750	2400	2160	1050	1670	1350	1310	1400	1620	1540
4	1940	1860	2550	2470	2150	1050	1760	1350	1300	1400	1620	1530
5	1820	1860	2570	2460	2140	1050	1760	1340	1300	1400	1620	1720
6	1940	1860	2600	2470	2300	1180	1760	1350	1300	1400	1650	1720
7	1940	1860	2500	2500	2300	1180	1770	1370	1300	1410	1650	1560
8	1940	1900	2510	1980	2300	1180	1780	1370	1520	1440	1610	1560
9	1520	1880	2500	1980	2260	1160	1960	1370	1420	1440	1650	1550
10	1720	1880	2500	1980	2250	1380	1840	1370	1420	1440	1520	1550
11	1810	1930	2500	1950	2450	1380	1880	1700	1520	1540	1650	1460
12	1880	1930	2450	1950	2300	1400	1800	1700	1520	1540	1610	1460
13	1860	2000	2500	1960	2340	1400	1770	1700	1520	1540	1640	1470
14	1850	2050	2500	1960	2260	1400	1770	1690	1520	1540	1610	1450
15	1930	2000	2450	1960	2250	1460	1820	1690	1520	1540	1610	1460
16	1950	2030	2350	1960	2230	1460	1820	1690	1420	1540	1610	1460
17	1900	2000	2600	2410	2200	1460	1840	1690	1420	1540	1610	1440
18	1940	1980	2350	1910	2250	1500	1400	1680	1220	1540	1610	1450
19	1950	2000	2350	2050	2250	1500	1240	1700	1200	1420	1610	1440
20	1940	1980	2350	2060	670	1500	1240	1750	1200	1540	1610	1450
21	1900	2130	2380	2040	680	1530	1240	1750	970	1540	1650	1460
22	1920	2130	2350	2040	680	1530	830	1750	970	1540	1680	1460
23	1930	2120	2550	2040	680	1530	830	1720	970	1430	1680	1440
24	1920	2120	2330	3200	680	1530	860	1710	980	1430	1670	1460
25	1950	2150	2330	3200	680	1530	1150	1610	1000	1660	1670	1460
26	1970	2300	2330	3200	670	1520	1150	1610	980	1660	1670	1450
27	1940	2300	2750	2240	670	1410	1000	1610	980	1660	1650	1450
28	1960	2330	2760	2230	670	1410	1000	1400	1200	1660	1650	1450
29	1920	2340	2770	2230	---	1410	1010	1390	1200	1660	1670	1450
30	1940	2360	2780	2230	---	1410	1010	1390	1300	1700	1680	1450
31	2110	---	2350	2230	---	1410	---	1400	---	1700	1610	---
AVG	1900	2040	2500	2260	1750	1360	1480	1520	1280	1520	1630	1500

06334500 LITTLE MISSOURI RIVER AT CAMP CROOK, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, JULY 1972 TO SEPTEMBER 1972

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	20.0
2	---	---	---	---	---	---	---	---	---	---	18.0	22.0
3	---	---	---	---	---	---	---	---	---	---	16.0	22.0
4	---	---	---	---	---	---	---	---	---	---	24.0	22.0
5	---	---	---	---	---	---	---	---	---	---	19.0	23.0
6	---	---	---	---	---	---	---	---	---	---	22.0	20.0
7	---	---	---	---	---	---	---	---	---	---	20.0	20.0
8	---	---	---	---	---	---	---	---	---	---	34.0	---
9	---	---	---	---	---	---	---	---	---	---	28.0	24.0
10	---	---	---	---	---	---	---	---	---	---	23.0	23.0
11	---	---	---	---	---	---	---	---	---	---	28.0	19.0
12	---	---	---	---	---	---	---	---	---	---	28.0	19.0
13	---	---	---	---	---	---	---	---	---	---	28.0	19.0
14	---	---	---	---	---	---	---	---	---	---	22.0	19.0
15	---	---	---	---	---	---	---	---	---	---	---	19.0
16	---	---	---	---	---	---	---	---	---	---	30.0	---
17	---	---	---	---	---	---	---	---	---	---	27.0	20.0
18	---	---	---	---	---	---	---	---	---	---	27.0	21.0
19	---	---	---	---	---	---	---	---	---	---	24.0	21.0
20	---	---	---	---	---	---	---	---	---	---	28.0	13.0
21	---	---	---	---	---	---	---	---	---	---	---	19.0
22	---	---	---	---	---	---	---	---	---	19.0	21.0	15.0
23	---	---	---	---	---	---	---	---	---	19.0	23.0	16.0
24	---	---	---	---	---	---	---	---	---	19.0	24.0	39.0
25	---	---	---	---	---	---	---	---	---	22.0	26.0	15.0
26	---	---	---	---	---	---	---	---	---	20.0	26.0	8.0
27	---	---	---	---	---	---	---	---	---	20.0	25.0	14.0
28	---	---	---	---	---	---	---	---	---	23.0	27.0	13.0
29	---	---	---	---	---	---	---	---	---	19.0	26.0	11.0
30	---	---	---	---	---	---	---	---	---	23.0	25.0	10.0
31	---	---	---	---	---	---	---	---	---	21.0	18.0	---
AVG	---	---	---	---	---	---	---	---	---	---	C 24.5	C 19.0

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	3.0	0.0	1.0	0.0	2.0	4.0	10.0	16.0	---	20.0	22.0
2	20.0	3.0	0.0	1.0	0.0	2.0	3.0	10.0	16.0	---	20.0	22.0
3	20.0	5.0	0.0	2.0	2.0	2.0	3.0	10.0	16.0	---	20.0	21.0
4	19.0	4.0	0.0	2.0	2.0	2.0	3.0	11.0	16.0	---	20.0	21.0
5	15.0	3.0	0.0	1.0	2.0	2.0	3.0	11.0	15.0	---	20.0	21.0
6	11.0	3.0	0.0	1.0	2.0	2.0	3.0	11.0	15.0	---	20.0	21.0
7	8.0	3.0	0.0	1.0	2.0	2.0	3.0	13.0	15.0	21.0	21.0	22.0
8	12.0	1.0	0.0	1.0	0.0	2.0	6.0	11.0	15.0	21.0	22.0	22.0
9	15.0	5.0	0.0	1.0	0.0	2.0	7.0	11.0	15.0	21.0	22.0	22.0
10	11.0	1.0	0.0	2.0	0.0	2.0	8.0	11.0	15.0	21.0	22.0	22.0
11	10.0	1.0	0.0	2.0	0.0	2.0	9.0	11.0	16.0	21.0	20.0	22.0
12	10.0	1.0	0.0	2.0	0.0	2.0	10.0	11.0	16.0	20.0	22.0	22.0
13	10.0	1.0	0.0	2.0	0.0	2.0	12.0	11.0	16.0	20.0	22.0	22.0
14	5.0	0.0	0.0	2.0	0.0	2.0	10.0	13.0	16.0	21.0	22.0	22.0
15	11.0	0.0	0.0	4.0	0.0	2.0	10.0	13.0	16.0	21.0	22.0	22.0
16	6.0	0.0	0.0	4.0	0.0	2.0	8.0	13.0	12.0	20.0	22.0	22.0
17	5.0	1.0	0.0	2.0	0.0	2.0	8.0	14.0	12.0	20.0	22.0	22.0
18	9.0	0.0	1.0	4.0	0.0	2.0	---	14.0	12.0	19.0	22.0	22.0
19	10.0	0.0	1.0	2.0	0.0	2.0	5.0	14.0	12.0	20.0	22.0	22.0
20	11.0	0.0	1.0	2.0	2.0	2.0	5.0	13.0	12.0	22.0	22.0	22.0
21	9.0	0.0	1.0	2.0	2.0	2.0	5.0	12.0	13.0	20.0	22.0	22.0
22	9.0	0.0	1.0	2.0	2.0	2.0	6.0	12.0	13.0	18.0	22.0	22.0
23	10.0	1.0	1.0	2.0	2.0	2.0	8.0	12.0	15.0	20.0	22.0	22.0
24	6.0	0.0	1.0	2.0	2.0	2.0	8.0	12.0	---	20.0	23.0	22.0
25	5.0	2.0	2.0	2.0	2.0	2.0	8.0	11.0	16.0	20.0	22.0	22.0
26	4.0	0.0	1.0	0.0	2.0	2.0	10.0	10.0	18.0	20.0	22.0	22.0
27	3.0	0.0	1.0	2.0	2.0	2.0	10.0	10.0	20.0	20.0	22.0	22.0
28	0.0	0.0	1.0	2.0	---	2.0	10.0	11.0	---	19.0	22.0	22.0
29	0.0	0.0	---	0.0	---	4.0	10.0	11.0	---	20.0	22.0	---
30	0.0	0.0	---	0.0	---	6.0	10.0	12.0	---	21.0	22.0	---
31	0.0	---	---	0.0	---	6.0	---	14.0	---	20.0	22.0	---
AVG	9.0	1.5	C 0.5	1.5	D 1.0	2.5	E 7.0	11.5	F 15.0	G 20.0	21.5	C 22.0

C Based on 28 days of data.
D Based on 27 days of data.
E Based on 29 days of data.
F Based on 26 days of data.
G Based on 24 days of data.

06357800 GRAND RIVER AT LITTLE EAGLE, S. DAK.

LOCATION.--Lat 45°30'28", long 100°49'04", in NE¼NE¼ sec.32, T.20 N., R.37 E., Corson County, at gaging station, on left bank at downstream side of bridge on State Highway 63, 1.3 mi (2.1 km) southwest of Little Eagle and 4.7 mi (7.6 km) downstream from Little Oak Creek.

DRAINAGE AREA.--5,370 mi² (13,910 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: June 1972.
Sediment records: October 1971 to September 1973.

EXTREMES.--1972-73:
Sediment concentrations: Maximum daily, 11,400 mg/l May 28; minimum daily, 85 mg/l Feb. 17-20, 22.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	114	185	57	132	150	53	110	185	55
2	114	180	55	135	145	53	95	180	46
3	114	175	54	139	145	54	85	180	41
4	114	170	52	135	145	53	85	175	40
5	173	1400	654	132	140	50	80	170	37
6	293	2000	1580	127	140	48	75	170	34
7	796	9600	20600	127	140	48	75	165	33
8	457	6000	7400	125	140	47	75	160	32
9	293	4000	3160	125	139	47	80	155	33
10	229	2600	1610	125	140	47	80	150	32
11	197	1400	745	123	135	45	80	145	31
12	179	800	387	120	135	44	85	140	32
13	163	600	264	95	135	35	85	135	31
14	154	400	166	70	130	25	85	130	30
15	147	200	79	70	130	25	85	125	29
16	144	195	76	85	130	30	85	120	28
17	137	195	72	95	135	35	90	120	29
18	137	190	70	120	150	49	90	115	28
19	137	190	70	140	175	66	90	110	27
20	135	185	67	140	200	76	95	110	28
21	135	180	66	150	209	85	95	108	28
22	132	175	62	140	205	77	100	105	28
23	130	170	60	150	205	83	100	105	28
24	127	168	58	140	200	76	95	105	27
25	127	165	57	140	200	76	95	105	27
26	127	165	57	130	195	68	100	100	27
27	127	160	55	130	195	68	100	100	27
28	125	160	54	120	190	62	100	105	28
29	127	155	53	120	190	62	95	110	28
30	127	155	53	120	185	60	95	110	28
31	114	150	46	--	--	--	90	110	27
TOTAL	5625	--	37839	3700	--	1647	2775	--	979

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	NUMBER OF SAM-PLING POINTS (00063)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
OCT.							
03...	1315	17.5	1	116	--	0	60
24...	1515	5.5	1	122	79	90	94
MAR.							
20...	0930	3.5	3	1020	0	1	56
APR.							
11...	1310	10.0	1	189	0	1	77
18...	1300	14.0	3	162	--	0	77
MAY							
17...	1310	19.0	3	168	--	0	56
29...	1630	18.0	3	984	9	3	71
JUNE							
14...	1100	23.0	3	179	--	0	52
JULY							
02...	1430	24.0	2	174	--	0	60
31...	1330	23.0	1	82	0	1	59
AUG.							
27...	1540	32.0	1	60	--	0	48

06357800 GRAND RIVER AT LITTLE EAGLE, S. DAK.--Continued

EXTREMES.--1972-73:--Continued
Sediment discharge: Maximum daily, 45,000 tons Feb. 27; minimum daily, 21 tons Aug. 17, 26, Sept. 1.

Period of record:
Sediment concentrations: Maximum daily, 19,000 mg/l May 2; minimum daily, 85 mg/l Feb. 17-20, 22, 1973.
Sediment discharge: Maximum daily, 259,000 tons Mar. 12, 1972; minimum daily, 9.2 tons Oct. 17, 1972.

REMARKS.--Sediment discharge record poor prior to May 15, good thereafter. Flow affected by ice Nov. 11 to Mar. 9. Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, Corps of Engineers, Omaha, Nebr. Miscellaneous samples for chemical data published for water years 1956, 1969.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	90	110	27	700	600	1130	4500	2800	34000
2	90	110	27	600	500	810	4000	2600	28100
3	85	120	28	500	450	608	3000	2400	19400
4	80	120	26	450	400	486	2200	2000	11900
5	80	120	26	400	380	410	1700	1800	8260
6	75	125	25	350	340	321	1400	1500	5670
7	75	125	25	320	300	259	1200	1200	3890
8	80	130	28	300	280	227	1000	1000	2700
9	80	130	28	280	260	197	900	900	2190
10	80	130	28	260	220	154	784	800	1690
11	90	135	33	240	180	117	495	700	936
12	95	135	35	220	140	83	404	650	709
13	110	140	42	200	120	65	366	600	593
14	120	145	47	200	100	54	750	1200	2430
15	120	150	49	180	90	44	1280	1300	4490
16	120	158	51	180	90	44	923	2100	5230
17	120	160	52	180	85	41	1040	3500	9830
18	200	160	86	180	85	41	1050	3200	9070
19	1000	2000	5400	200	85	46	1040	2700	7580
20	4000	4000	43200	220	85	50	991	2600	6960
21	3500	2500	23600	240	86	56	874	2700	6370
22	2000	1500	8100	300	85	69	773	1800	3760
23	1000	1000	2700	500	100	135	892	1900	4580
24	900	500	1220	1000	500	1350	862	1900	4420
25	1000	800	2160	2500	2000	13500	732	1150	2270
26	2000	1000	5400	4000	4000	43200	613	900	1490
27	3000	2000	16200	3700	4500	45000	505	850	1160
28	2500	1500	10100	3500	3500	33100	466	800	1010
29	1800	1200	5830	--	--	--	417	750	844
30	1400	1000	3780	--	--	--	375	700	709
31	1000	800	2160	--	--	--	334	650	586
TOTAL	26890	--	130513	21900	--	141597	35866	--	192827

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT.						
03...	97	99	100	--	--	--
24...	95	96	97	98	100	--
MAR.						
20...	77	84	90	95	99	100
APR.						
11...	97	99	99	100	--	--
18...	97	99	100	--	--	--
MAY						
17...	93	98	99	100	--	--
29...	95	98	99	99	100	--
JUNE						
14...	92	97	98	99	100	--
JULY						
02...	93	98	99	100	--	--
31...	93	97	99	100	--	--
AUG.						
27...	91	97	99	100	--	--

06357800 GRAND RIVER AT LITTLE EAGLE, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	300	600	486	350	290	274	342	1050	970
2	281	560	425	338	246	224	278	750	563
3	257	520	361	331	279	249	239	450	290
4	236	480	306	323	270	235	293	900	712
5	216	440	257	315	262	223	346	950	887
6	200	400	216	281	254	193	300	1800	1460
7	197	360	191	293	246	195	239	1700	1100
8	194	320	168	289	238	186	213	1500	863
9	185	280	140	267	230	166	200	800	432
10	182	260	128	250	220	149	194	550	288
11	182	240	118	232	204	128	191	420	217
12	173	235	110	226	209	128	188	303	154
13	176	230	109	200	190	103	185	260	130
14	171	220	102	188	170	86	179	213	103
15	157	210	89	182	155	76	168	167	76
16	157	200	85	168	150	68	168	201	91
17	165	195	87	157	140	59	185	223	111
18	165	188	84	160	157	68	226	807	492
19	165	180	80	147	137	54	232	1360	852
20	168	150	68	139	187	70	246	1060	704
21	554	4000	5980	137	132	49	292	800	631
22	964	6800	17700	132	112	40	274	5700	4220
23	597	3300	5320	130	132	46	216	4000	2330
24	452	2000	2440	125	127	43	191	3190	1650
25	450	1300	1580	125	105	35	185	1140	569
26	457	800	987	199	1100	591	176	677	322
27	400	500	540	432	2200	2570	173	442	206
28	413	350	390	1380	11400	42500	176	320	152
29	383	300	310	1000	6500	17600	179	259	125
30	365	300	296	634	3800	6500	173	279	130
31	--	--	--	434	1900	2230	--	--	--
TOTAL	8962	--	39153	9564	--	75138	6647	--	20830

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	160	205	89	80	227	49	76	100	21
2	165	210	94	77	240	50	93	500	126
3	147	220	87	77	255	53	274	2000	1480
4	142	153	59	73	216	43	1550	6200	25900
5	135	335	122	71	172	33	1090	3800	11200
6	127	152	52	74	213	43	784	1900	4020
7	118	186	59	71	157	30	289	3400	2650
8	114	178	55	70	186	35	229	6600	4080
9	105	144	41	76	177	36	171	5200	2400
10	103	138	38	74	152	30	142	2600	997
11	101	166	45	73	168	33	130	1000	351
12	95	195	50	71	145	28	114	590	182
13	95	152	39	68	202	37	107	400	116
14	91	153	38	67	127	23	105	350	99
15	93	139	35	68	130	24	112	560	169
16	95	123	32	66	161	29	112	240	73
17	95	109	28	63	122	21	116	200	63
18	95	142	36	61	140	23	123	830	276
19	97	155	41	60	151	24	112	1220	369
20	99	111	30	62	150	25	107	978	283
21	99	114	30	63	150	26	103	830	231
22	101	144	39	65	151	27	105	700	198
23	118	270	86	67	140	25	105	516	146
24	139	500	188	71	130	25	194	2000	1050
25	293	8900	7040	74	115	23	142	1200	460
26	236	5000	3190	71	107	21	313	7000	5920
27	157	3200	1360	68	163	30	232	4700	2940
28	132	1200	428	74	121	24	182	3200	1570
29	116	600	188	77	115	24	149	2500	1010
30	95	403	103	77	110	23	121	1950	637
31	83	314	70	76	105	22	--	--	--
TOTAL	3841	--	13792	2105	--	939	7482	--	69017

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	135437
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	724271

06357800 GRAND RIVER AT LITTLE EAGLE, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	12.0	20.0	---	33.0	---
2	---	---	---	---	---	---	---	14.5	---	24.0	---	---
3	17.5	---	---	---	---	---	---	17.0	---	---	19.0	---
4	---	---	---	---	---	---	---	---	---	---	---	19.0
5	---	---	---	---	---	---	---	---	---	---	28.0	20.0
6	---	---	---	---	---	---	---	---	---	---	23.0	21.5
7	---	---	---	---	---	---	---	---	---	---	27.0	20.0
8	---	---	---	---	---	---	---	---	---	---	23.0	---
9	---	2.0	---	---	---	---	---	---	---	29.0	20.0	---
10	---	---	---	---	---	---	---	15.5	---	29.0	29.0	---
11	---	---	---	---	---	---	10.0	17.5	---	31.0	29.0	18.5
12	---	---	---	---	---	---	---	---	---	---	28.0	---
13	---	---	---	---	---	1.0	---	---	---	24.0	29.0	16.5
14	---	---	---	---	---	---	---	---	23.0	23.0	19.0	---
15	---	---	---	---	---	3.5	---	---	28.0	23.0	24.0	---
16	---	---	---	0.0	---	8.0	---	---	20.0	28.0	25.0	16.0
17	---	---	---	---	---	---	---	19.0	19.0	22.0	31.0	18.0
18	---	---	---	---	---	---	14.0	23.0	13.0	28.0	---	---
19	---	---	---	---	---	---	---	24.0	15.0	22.0	25.0	---
20	---	---	---	---	---	3.5	---	22.0	21.0	26.0	---	13.0
21	---	0.0	0.0	---	0.0	---	---	19.0	20.0	19.0	---	---
22	---	---	---	---	---	---	---	21.0	---	21.0	---	---
23	---	---	---	---	---	---	---	18.0	---	20.0	---	12.5
24	5.5	---	---	---	---	---	---	18.0	---	19.0	---	13.5
25	---	---	---	---	---	---	---	18.0	---	23.0	---	---
26	---	---	---	---	---	---	---	11.0	---	21.0	---	---
27	---	---	---	---	---	---	---	12.0	---	25.0	---	18.0
28	---	---	---	---	---	---	---	15.0	---	24.0	---	---
29	---	---	---	---	---	---	---	18.0	---	28.0	---	---
30	---	---	---	---	---	---	---	21.0	---	27.0	---	---
31	---	---	---	---	---	---	---	18.0	---	23.0	---	---
AVG	---	---	---	---	---	---	---	---	---	---	---	---

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. FALL DIAM. % FINER THAN .062 MM (70342)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)
MAR.											
20...	0930	3.5	1020	2540	7000	45	54	70	74	80	100
MAY											
28...	1145	15.0	1470	11000	39700	63	--	84	97	98	100
29...	1630	18.0	984	6220	16500	--	82	91	97	98	100
JUNE											
22...	1845	20.0	203	5720	3140	81	92	96	100	--	--
JULY											
25...	1500	23.0	281	10700	8120	68	85	98	100	--	--
SEP.											
27...	1745	20.0	203	4690	2570	85	92	96	100	--	--

06360500 MOREAU RIVER NEAR WHITEHORSE, S. DAK.

LOCATION.--Lat 45°15'21", long 100°50'33", in SW¼SE¼ sec.17, T.15 N., R.27 E., Dewey County, at gaging station, on left bank 30 ft (9 m) downstream from bridge, 2.4 mi (3.9 km) southeast of Whitehorse, 8.8 mi (14.2 km) downstream from Little Moreau River, and 16.3 mi (26.2 km) southeast of town of Timber Lake.

DRAINAGE AREA.--4,880 mi² (12,640 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: June 1972.
Sediment records: October 1971 to September 1973.

EXTREMES.--1972-73:
Sediment concentrations: Maximum daily, 13,700 mg/l Apr. 21; minimum daily, no flow Oct. 1-4, Dec. 5-12, Jan. 5-11.
Sediment discharge: Maximum daily, 60,600 tons Apr. 22; minimum daily, 0 tons Oct. 1-4, Dec. 5-12, Jan. 5-11.

Period of record:
Sediment concentrations: Maximum daily, 20,000 mg/l May 1, 1972; minimum daily, no flow on several days each year.
Sediment discharge: Maximum daily, 239,000 tons Mar. 15, 1972; minimum daily, 0 tons on several days each year.

REMARKS.--Records poor. Flow affected by ice Nov. 10 to Mar. 3. Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, Corps of Engineers, Omaha, Nebr. Miscellaneous samples for chemical data published for water year 1969.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	0	0	0	11	305	9.1	6.0	160	2.6
2	0	0	0	8.5	310	7.1	4.0	150	1.6
3	0	0	0	7.6	315	6.5	2.0	150	.81
4	0	0	0	7.6	320	6.6	1.0	150	.41
5	.54	150	.22	7.6	325	6.7	0	0	0
6	1.8	200	.97	7.6	330	6.8	0	0	0
7	.33	220	.20	7.6	335	6.9	0	0	0
8	.14	225	.09	7.6	340	7.0	0	0	0
9	.07	250	.05	7.2	246	4.8	0	0	0
10	.14	260	.10	7.0	220	4.2	0	0	0
11	.14	255	.10	7.0	202	3.8	0	0	0
12	.14	250	.09	6.0	205	3.3	0	0	0
13	1.8	260	1.3	6.0	210	3.4	.10	150	.04
14	16	265	11	5.0	210	2.8	.30	155	.13
15	15	270	11	6.0	200	3.2	.50	160	.22
16	13	275	9.7	6.0	195	3.2	1.0	160	.43
17	11	280	8.3	7.0	190	3.6	1.0	165	.45
18	9.3	275	6.9	7.0	195	3.7	1.0	170	.46
19	8.5	270	6.2	8.0	200	4.3	2.0	175	.95
20	7.2	265	5.2	9.0	205	5.0	2.0	180	.97
21	7.0	260	4.9	9.0	204	5.0	3.0	191	1.5
22	8.0	270	5.8	10	200	5.4	3.0	190	1.5
23	9.0	270	6.6	11	195	5.8	4.0	185	2.0
24	9.3	273	6.9	11	190	5.6	5.0	180	2.4
25	8.9	270	6.5	10	185	5.0	5.0	175	2.4
26	8.0	275	5.9	8.0	180	3.9	5.0	175	2.4
27	7.2	275	5.3	8.0	175	3.8	5.0	170	2.3
28	7.6	280	5.7	8.0	170	3.7	4.0	180	1.9
29	7.2	285	5.5	7.0	175	3.3	2.0	170	.92
30	6.8	290	5.3	7.0	170	3.2	1.0	165	.45
31	8.0	300	6.5	--	--	--	1.0	160	.43
TOTAL	172.10	--	126.32	235.3	--	146.7	58.90	--	27.27

06360500 MOREAU RIVER NEAR WHITEHORSE, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	.50	160	.22	500	320	432	1300	600	2110
2	.40	150	.16	460	300	373	1400	400	1510
3	.30	150	.12	440	290	345	1800	4600	22400
4	.10	160	.04	440	280	333	926	4100	10300
5	0	0	0	420	260	295	713	3500	6740
6	0	0	0	380	240	246	627	2900	4910
7	0	0	0	300	230	186	631	2500	4260
8	0	0	0	250	220	149	501	2200	2980
9	0	0	0	200	210	113	416	2000	2250
10	0	0	0	150	200	81	388	1600	1680
11	0	0	0	100	180	49	392	1400	1480
12	1.0	200	.54	90	160	39	332	1300	1170
13	30	380	31	90	170	41	246	1200	797
14	50	400	54	85	150	34	949	4700	12000
15	100	500	135	80	160	35	883	4600	11000
16	260	512	359	80	180	39	730	4500	8870
17	300	600	486	85	200	46	665	3500	6280
18	300	800	648	95	210	54	610	2900	4780
19	250	1000	675	100	230	62	695	3400	6380
20	220	1500	891	120	240	78	837	4200	9490
21	200	1500	810	140	257	97	810	4300	9400
22	250	1200	810	150	500	203	748	3600	7270
23	300	1000	810	200	2000	1080	819	3000	6630
24	350	900	851	250	2500	1690	851	2600	5970
25	450	800	972	300	2000	1620	936	2900	7330
26	500	700	945	400	1500	1620	735	2300	4560
27	600	600	972	750	1200	2430	644	1600	2780
28	600	500	810	1500	1000	4050	530	1200	1720
29	600	450	729	--	--	--	443	1000	1200
30	600	400	648	--	--	--	371	800	801
31	550	350	520	--	--	--	316	700	597
TOTAL	6512.30	--	12157.08	8155	--	15820	22244	--	169645

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	274	600	444	205	1170	648	704	5200	9880
2	235	550	349	169	974	444	722	7200	14000
3	203	558	306	147	982	390	960	10600	27500
4	174	470	221	123	754	250	640	4900	8470
5	150	369	149	106	670	192	534	4200	6060
6	126	350	119	93	487	122	788	7300	15500
7	113	284	87	83	380	85	674	6500	11800
8	102	250	69	74	284	57	584	6700	10600
9	92	226	56	68	240	44	431	4600	5350
10	81	230	50	62	238	40	322	3900	3390
11	75	230	47	58	235	37	230	3100	1930
12	67	220	40	52	232	33	169	1530	698
13	62	254	43	46	210	26	138	876	326
14	59	263	42	40	190	21	113	689	210
15	57	260	40	37	182	18	102	571	157
16	57	255	39	32	152	13	87	504	118
17	54	244	36	29	193	15	74	387	77
18	50	258	35	28	222	17	65	342	60
19	46	302	38	27	220	16	61	400	66
20	386	10000	10400	25	215	15	131	1050	371
21	1440	13700	53300	24	220	14	215	2050	1190
22	2040	11000	60600	21	222	13	133	3500	1260
23	1610	8000	34800	19	193	9.9	95	4750	1220
24	1020	5900	16200	17	171	7.8	70	3650	690
25	824	4600	10200	16	173	7.5	49	650	86
26	644	4600	8000	28	300	23	37	228	23
27	509	5000	6870	291	7420	5950	29	167	13
28	439	3200	3790	354	4230	5170	25	118	8.0
29	335	2050	1850	1260	11900	41800	21	110	6.2
30	263	1600	1140	912	6400	15800	19	98	5.0
31	--	--	--	774	6500	13600	--	--	--
TOTAL	11587	--	209360	5220	--	84878.2	8222	--	121064.2

06360500 MOREAU RIVER NEAR WHITEHORSE, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	19	178	9.1	65	850	149	15	113	4.6
2	16	158	6.8	52	650	91	13	110	3.9
3	14	139	5.3	41	450	50	13	110	3.9
4	12	123	4.0	33	354	32	15	158	6.4
5	10	135	3.6	33	258	23	21	130	7.4
6	8.5	153	3.5	26	141	9.9	17	110	5.0
7	7.2	292	5.7	20	120	6.5	18	150	7.3
8	5.7	223	3.4	18	99	4.8	21	140	7.9
9	4.2	268	3.0	16	86	3.7	16	125	5.4
10	3.5	226	2.1	15	92	3.7	16	140	6.0
11	1.2	238	.77	14	77	2.9	17	135	6.2
12	.84	240	.54	12	108	3.5	14	130	4.9
13	.84	235	.53	9.7	124	3.2	13	125	4.4
14	.84	240	.54	8.5	120	2.8	11	120	3.6
15	.84	244	.55	7.2	117	2.3	9.7	115	3.0
16	.60	192	.31	5.7	129	2.0	9.7	115	3.0
17	.38	163	.17	5.4	128	1.9	8.9	115	2.8
18	.24	205	.13	4.6	126	1.6	7.2	116	2.3
19	.17	174	.08	3.5	124	1.2	6.1	113	1.9
20	.14	166	.06	1.8	121	.59	5.7	112	1.7
21	.14	122	.05	.84	120	.27	5.0	116	1.6
22	.09	131	.03	2.0	127	.69	5.0	117	1.6
23	.67	109	.20	2.5	115	.78	4.6	153	1.9
24	1.2	250	.81	2.0	103	.56	5.7	145	2.2
25	.84	170	.39	.99	136	.36	6.1	135	2.2
26	.99	153	.41	35	380	36	6.5	135	2.4
27	.99	148	.40	58	220	34	6.5	135	2.4
28	232	3150	1970	40	120	13	20	200	11
29	159	2900	1240	29	118	9.2	36	168	16
30	109	1800	530	22	109	6.5	29	130	10
31	81	1150	252	18	115	5.6	--	--	--
TOTAL	692.11	--	4044.47	601.73	--	502.55	391.7	--	142.9

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) 44892.14
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) 617914.69

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	5.5	20.0	22.0	---	---
2	---	---	---	---	---	---	5.5	8.0	21.0	18.0	---	---
3	---	---	---	---	---	---	5.5	9.0	16.5	19.0	---	---
4	---	---	---	---	---	---	3.5	12.0	15.5	21.0	---	20.0
5	---	---	---	---	---	---	8.0	14.5	15.5	---	---	---
6	---	---	---	---	---	---	8.0	14.5	18.0	23.5	24.0	---
7	---	---	---	---	---	---	3.5	---	19.0	21.0	---	---
8	---	2.5	---	---	---	---	---	15.5	21.0	19.0	19.0	---
9	---	0.0	---	---	---	4.5	4.0	14.5	21.0	---	16.0	---
10	---	---	---	---	---	---	---	11.0	21.0	---	20.0	---
11	---	1.0	---	---	---	---	4.5	12.5	20.0	24.0	19.0	---
12	---	---	---	---	---	---	6.5	10.0	18.0	---	20.0	---
13	---	---	---	---	---	---	8.0	---	20.0	---	18.0	---
14	---	---	---	---	---	---	11.0	---	20.0	---	25.5	---
15	---	---	---	---	---	---	---	12.0	20.0	---	19.0	---
16	---	---	---	0.0	---	---	3.5	11.0	---	---	20.0	---
17	---	---	---	---	---	---	8.0	12.0	---	---	21.0	13.0
18	---	---	---	---	---	---	13.5	14.5	15.5	---	---	13.0
19	---	---	---	---	---	8.5	14.0	18.0	13.5	---	---	13.0
20	---	---	---	---	---	7.5	---	---	14.5	---	20.0	13.0
21	4.5	0.0	0.0	---	0.0	4.5	---	---	18.0	---	20.0	12.0
22	---	---	---	---	---	2.5	---	13.5	19.0	---	20.0	10.0
23	---	---	---	---	---	5.0	10.0	14.5	20.0	---	---	10.0
24	4.5	---	---	---	---	5.5	11.0	13.5	20.0	---	20.0	---
25	---	---	---	---	---	---	9.0	13.5	20.0	---	20.0	10.0
26	---	---	---	---	---	4.5	9.0	---	20.0	---	---	---
27	---	---	---	---	---	5.5	8.0	14.5	18.0	---	22.0	9.0
28	---	---	---	---	---	4.5	10.0	15.5	19.0	---	26.5	12.0
29	---	---	---	---	---	4.5	11.0	15.0	---	---	20.0	12.0
30	---	---	---	0.0	---	---	11.0	15.5	21.0	---	21.0	10.5
31	---	---	---	---	---	---	---	18.0	---	23.0	20.0	---
AVG	---	---	---	---	---	---	---	A 13.0	B 18.5	---	---	---

A Based on 25 days of data.
B Based on 28 days of data.

06360500 MOREAU RIVER NEAR WHITEHORSE, S. DAK.--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. FALL DIAM. % FINER THAN .062 MM (70342)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)
MAR.											
09...	1000	4.5	394	1960	2090	45	62	76	93	95	100
19...	1630	4.0	783	3460	7310	47	57	70	91	96	100
20...	1450	7.5	880	4400	10500	44	46	64	90	98	100
APR.											
23...	0815	10.0	1930	7500	39100	49	60	76	96	100	--
26...	0900	9.0	627	4380	7410	64	74	89	96	97	100
MAY											
29...	1130	15.0	1500	13400	54300	46	68	84	96	99	100
JUNE											
23...	0830	20.0	89	4540	1090	83	94	99	100	--	--
JULY											
31...	1045	23.0	83	1190	267	86	93	100	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	NUMBER OF SAMPLING POINTS (00063)	INSTANTANEOUS DISCHARGE (CFS) (00061)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
OCT.							
24...	1230	4.5	1	9.2	7	12	39
MAR.							
19...	1630	4.0	3	783	1	14	92
APR.							
11...	1015	7.0	1	78	1	5	47
19...	1100	14.0	1	46	1	6	58
MAY							
29...	1130	15.0	3	1500	1	10	85
JUNE							
13...	1300	25.5	3	130	3	6	84
JULY							
02...	1030	24.0	1	16	1	4	66
31...	1045	23.0	1	83	1	6	81
AUG.							
27...	1115	30.0	1	58	5	14	88

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT.							
24...	42	43	46	54	72	100	--
MAR.							
19...	99	99	100	--	--	--	--
APR.							
11...	58	63	72	82	92	98	100
19...	83	92	96	98	99	100	--
MAY							
29...	96	98	98	99	100	--	--
JUNE							
13...	94	96	98	99	100	--	--
JULY							
02...	90	95	98	100	--	--	--
31...	92	94	96	98	100	--	--
AUG.							
27...	98	99	100	--	--	--	--

06386500 CHEYENNE RIVER NEAR SPENCER, WYO.

LOCATION.--Lat 43°25', long 104°08', in N½ sec.25, T.40 N., R.61 W., Niobrara County, Wyoming, at gaging station, at old highway bridge, 1.8 mi (2.9 km) downstream from Robbers Roost Creek, 7.5 mi (12.1 km) northeast of Spencer, and 30 mi (48 km) south of Newcastle.

DRAINAGE AREA.--5,270 mi² (13,650 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: May 1969 to June 1970.
Sediment records: June 1951 to August 1954, November 1971 to September 1973.
Prior to October 1951, published as South Fork Cheyenne River near Spencer.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	DISCHARGE (CFS) (00060)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)	SUS. SED. FALL DIAM. % FINER THAN .500 MM (70345)
APR.											
09...	1700	10.5	1.2	29	.09	--	--	--	--	--	--
MAY											
08...	1230	15.0	1320	11700	41700	61	79	89	94	98	100
22...	1930	21.5	46	229	28	--	--	--	--	--	--
JUNE											
07...	1540	26.5	22	76	4.5	--	--	--	--	--	--
JULY											
27...	1205	25.0	70	772	146	--	--	--	--	--	--
SEP.											
20...	1535	21.0	75	316	64	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	DISCHARGE (CFS) (00060)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)
JULY							
27...	1205	25.0	70	5	16	31	48

DATE	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
JULY						
27...	75	87	94	97	98	100

06394000 BEAVER CREEK NEAR NEWCASTLE, WYO.

LOCATION.--Lat 43°32'07", long 104°07'42", in NW¼ sec.18, T.41 N., R.60 W., Weston County, Wyoming, at gaging station, at highway bridge, 2.2 mi (3.5 km) downstream from Sheep Creek, and 23 mi (37 km) south of Newcastle.

DRAINAGE AREA.--1,320 mi² (3,420 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: December 1949 to September 1952, December 1952 to August 1953, October 1967 to September 1973.
Sediment records: September 1949, March 1950 to September 1957.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
OCT. 18...	1110	16	7.5	400	470	84	310	4.4	183	1500	390	1.2
NOV. 16...	0655	18	10	110	450	110	350	4.4	184	1500	460	1.0
DEC. 15...	1115	6.4	13	100	570	150	430	7.0	312	2000	540	1.2
JAN. 16...	1000	13	12	10	460	100	140	4.0	224	1400	170	1.0
FEB. 13...	1120	16	11	50	460	92	260	3.7	225	1400	340	1.0
MAR. 13...	0900	17	6.8	60	380	88	400	4.9	228	1400	460	1.0
APR. 10...	1045	7.7	8.8	50	500	220	670	5.1	211	1900	980	1.1
MAY 08...	1020	10	8.5	130	79	37	180	4.6	99	450	150	.5
JUNE 07...	1205	23	7.4	110	140	68	270	7.2	124	1000	44	.9
JULY 26...	1540	48	7.7	100	80	22	160	5.6	107	890	40	.8
AUG. 23...	1130	7.0	.7	60	480	180	470	5.6	71	2100	560	1.3
SEP. 20...	1045	5.2	4.4	100	440	140	550	6.3	130	1700	740	.9

DATE	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	ALKA-LINITY AS CACO3 (MG/L) (00410)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 18...	.36	170	2990	4.07	129	1500	1400	117	3.5	3590	8.0	6.5
NOV. 16...	.11	150	3140	4.27	119	1600	1500	151	3.8	3860	8.0	.0
DEC. 15...	.27	210	4060	5.52	70.2	2100	1800	256	4.1	4600	7.8	.0
JAN. 16...	5.6	110	2610	3.55	91.6	1600	1400	184	1.5	2880	7.3	.0
FEB. 13...	.43	180	2880	3.92	124	1500	1300	185	2.9	3360	8.0	.0
MAR. 13...	.18	220	2920	3.97	134	1300	1100	187	4.8	3700	8.0	.0
APR. 10...	.23	230	4440	6.04	92.3	2200	2000	173	6.3	5260	7.8	3.5
MAY 08...	.36	130	954	1.30	25.8	350	270	81	4.2	1370	7.6	13.0
JUNE 07...	.81	240	1660	2.26	103	640	540	102	4.7	2040	7.5	19.0
JULY 26...	.52	170	868	1.18	112	300	210	88	4.0	1250	7.5	22.0
AUG. 23...	.80	270	4040	5.50	76.4	2000	1900	58	4.6	4650	7.6	23.0
SEP. 20...	.07	270	3860	5.25	54.2	1700	1600	107	5.8	4070	8.0	13.0

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

06395000 CHEYENNE RIVER AT EDGEMONT, S. DAK.

LOCATION.--Lat 43°18'20", long 103°49'14", in SW¼SE¼SE¼ sec.36, T.8 S., R.2 E., Fall River County, at gaging station, on right bank at downstream side of bridge on U.S. Highway 18 at Edgemont, 300 ft (91 m) downstream from Burlington Northern Railroad bridge, and 600 ft (183 m) upstream from Cottonwood Creek.

DRAINAGE AREA.--7,143 mi² (18,500 km²).

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
OCT. 26...	1100	14	430	120	400	6.6	185	0	1600	420	.6
NOV. 29...	1300	13	570	160	550	6.8	279	0	2200	640	.6
DEC. 20...	1300	2.7	570	170	570	8.5	314	0	2200	540	.6
JAN. 24...	1500	10	530	130	290	6.6	313	0	1800	320	.5
FEB. 26...	1315	26	400	98	300	3.9	206	0	1400	330	.4
MAR. 28...	1030	32	300	95	410	5.7	232	0	1300	340	.6
MAY 23...	1330	41	180	69	300	9.3	274	0	1000	120	.7
JUNE 20...	1200	46	160	60	270	8.2	169	0	960	89	.8
JULY 25...	1230	193	67	22	110	5.8	129	0	350	30	.5
AUG. 21...	1100	3.8	370	120	550	13	190	0	1900	390	.7
SEP. 26...	1100	44	190	67	340	9.1	229	0	930	200	.5

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
OCT., 1972 26...	1100	14	.04	.00	.15	--	.76	.91	.95	.03	.06
NOV. 29...	1300	13	.14	.00	.04	--	.28	.32	.46	.00	.03
DEC. 20...	1300	2.7	.39	.00	.10	.10	.27	.37	.76	.02	.05
JAN., 1973 24...	1500	10	.46	.00	.04	.04	.28	.32	.78	.00	.03
FEB. 26...	1315	26	.23	.00	--	.05	.08	.13	.33	.01	.05
MAR. 28...	1030	32	.21	.01	--	.12	.55	.67	.89	.01	.13
MAY 23...	1330	41	.00	.00	--	.04	.43	.47	.49	.01	.05
JUNE 20...	1200	46	.21	.00	--	.35	3.8	4.1	4.4	.01	1.1
JULY 25...	1230	193	.25	.01	--	.17	3.5	3.7	4.1	.00	.20
AUG. 21...	1100	3.8	.00	.00	--	.06	.19	.25	.27	.00	.01
SEP. 26...	1100	44	.02	.01	--	.22	.28	.50	.54	.03	.17

06395000 CHEYENNE RIVER AT EDGEMONT, S. DAK.--Continued

PERIOD OF RECORD.--Chemical analyses: July 1969 to September 1973.

REMARKS.--Miscellaneous samples for chemical data published for water year 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT.										
26...	.04	3280	4.46	124	1600	1400	4.4	4000	7.9	6.0
NOV.										
29...	.14	4440	6.04	163	2100	1900	5.2	5360	7.6	.0
DEC.										
20...	.39	4460	6.07	32.5	2100	1900	5.4	5260	7.5	.0
JAN.										
24...	.46	3460	4.71	93.4	1900	1600	2.9	3640	7.9	.0
FEB.										
26...	.23	2520	3.43	178	1400	1200	5.5	3340	8.0	.0
MAR.										
28...	.22	3110	4.23	269	1100	950	5.3	3490	8.3	4.0
MAY										
23...	.00	1990	2.71	220	730	510	4.8	2660	8.3	23.5
JUNE										
20...	.21	1740	2.37	216	650	510	4.6	2180	7.6	16.0
JULY										
25...	.26	695	.95	362	260	190	3.0	980	8.0	22.0
AUG.										
21...	.00	3570	4.86	36.6	1400	1300	6.4	4010	8.2	26.5
SEP.										
26...	.03	1970	2.68	235	750	560	5.4	2660	8.0	15.5

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
OCT.									
26...	1100	14	6.0	10.0	11.0	.9	8.8	20	13
NOV.									
29...	1300	13	.0	-3.0	11.6	1.0	8.9	340	3
DEC.									
20...	1300	2.7	.0	7.0	7.3	.8	7.8	--	--
JAN.									
24...	1130	10	.0	10.0	12.7	1.2	8.2	<0	--
FEB.									
26...	1215	26	.0	6.0	13.0	.8	8.0	<0	<0
MAR.									
28...	1030	32	4.0	8.5	11.4	1.0	8.1	<0	<0
APR.									
26...	1400	189	14.0	16.5	8.1	1.2	8.0	--	1400
MAY									
08...	1145	1630	16.0	22.0	7.2	1.0	7.7	5000	4800
23...	1330	41	23.5	26.0	7.2	.8	8.9	1300	27
JUNE									
20...	1200	46	16.0	25.0	8.4	1.6	8.0	3800	3500
JULY									
10...	1015	5.1	22.0	31.0	8.1	--	8.0	--	--
25...	1230	193	22.0	25.0	5.5	1.8	7.7	3800	3050
AUG.									
07...	1330	20	29.0	25.0	7.8	--	7.8	--	--
21...	1100	3.8	26.5	29.0	8.1	2.0	8.2	3200	1700
SEP.									
11...	1115	957	16.0	16.5	8.2	--	7.5	--	--
26...	1100	44	15.5	20.5	9.0	1.8	8.2	60	28

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, S. DAK.

LOCATION.--Lat 43°20'42", long 103°26'12", in NE¼NW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, at gaging station, on right bank 800 ft (244 m) downstream from Angostura Dam, 4.8 mi (7.7 km) upstream from Fall River, and 6.5 mi (10.5 km) southeast of Hot Springs.

DRAINAGE AREA.--9,100 mi² (23,600 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: September 1968 (miscellaneous station), October 1968 to September 1973.
Water temperatures: October 1968 to September 1973.
Sediment records: Water years 1958, 1960-63 (partial-record station).

EXTREMES.--1972-73:
Dissolved solids: Maximum, 1,560 mg/l Mar. 1-31; minimum, 1,470 mg/l Aug. 1-31.
Hardness: Maximum, 840 mg/l Mar. 1-31; minimum, 760 mg/l Oct. 1-31.
Specific conductance: Maximum daily, 2,200 micromhos Dec. 2; minimum, 1,860 micromhos Sept. 9.
Water temperatures: Maximum, 30.0°C July 8, Aug. 21; minimum, freezing point on many days during November to January.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 01-31	--	1.2	19	200	64	170	14	194	890	95	.6	.58
NOV., 01-30	--	1.3	16	210	64	160	12	199	850	95	.6	.54
DEC., 01-31	--	1.2	14	210	70	170	12	202	930	94	.6	.44
JAN., 01-31	--	1.3	17	200	66	180	11	180	860	99	.7	.46
FEB., 01-28	--	1.6	13	210	60	180	10	181	880	100	.7	.24
MAR., 01-31	--	1.6	11	220	71	160	5.2	176	900	100	.7	.19
APR., 01-30	--	1.4	12	210	71	160	9.7	171	900	100	.7	.14
MAY 01-31	--	102	10	200	65	160	9.7	173	850	96	.6	.20
JUNE 01-30	--	1.9	16	200	65	170	11	158	870	100	.6	.20
JULY 01-31	--	1.4	21	210	68	170	13	171	880	96	.4	.13
AUG., 01-31	--	1.4	14	210	67	170	14	162	820	96	.7	.18
SEP., 01-30	--	1.4	12	200	68	170	12	171	840	95	.6	.19
WTD. AVG.	--	--	11	201	65	161	9.9	174	853	96	.6	.21
TIME WTD. AVG.	--	10.0	15	207	67	168	11	178	873	97	.6	.29
TOT. LOAD (TONS)	--	--	104	1970	640	1580	97	1700	8360	943	5.9	2.1

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 12...	1330	A 1.3	8.9	200	67	160	10	178	850	98	.7	.21
DEC., 01...	1330	A 1.0	9.1	200	70	170	9.3	195	880	99	.6	.19
FEB., 20...	1100	A 1.4	7.3	230	78	190	11	206	1000	100	.7	.12
MAR., 21...	1330	A 60	6.4	240	74	160	9.5	186	910	100	.6	.09
APR., 18...	0915	A 1.3	5.0	230	71	170	9.7	181	930	110	.7	.06
MAY 15...	1600	A 156	6.2	230	60	180	7.9	158	940	110	.5	.07
JUNE 12...	1430	A 1.8	5.6	210	63	160	9.2	157	820	99	1.0	.03
JULY 09...	1045	A 1.3	5.4	210	69	170	9.2	165	890	99	.9	.04
AUG., 06...	1420	A 1.4	8.5	210	70	170	9.9	163	870	94	.6	.05

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Discharge at time of sampling.

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1968-69, 1971-73): Maximum, 1,770 mg/l Mar. 1 to Apr. 30, 1969; minimum, 1,450 mg/l Feb. 1-29, 1972.
Hardness (1968-69, 1971-73): Maximum, 900 mg/l Jan. 1-31, 1972; minimum, 750 mg/l Feb. 1-29, 1972.
Specific conductance (1968-70, 1971-73): Maximum daily, 2,400 micromhos Jan. 1, 1972; minimum daily, 1,750 micromhos Mar. 4, June 21-25, 1972.
Water temperatures (1968-70, 1971-73): Maximum, 30.0°C on several days during June to July 1970, July 8, Aug. 21, 1973; minimum, freezing point on several days in 1968, 1971-73.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 1,720 mg/l Feb. 20; hardness, 900 mg/l Feb. 20, Mar. 21. Minimum observed during water year: Dissolved solids, 1,450 mg/l June 12. Additional samples collected for more comprehensive definition of water quality.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.01	.03	150	1550	2.11	5.02	760	600	2.7	2040	8.0	--
NOV. 01-30	.02	.02	140	1510	2.05	5.30	790	620	2.5	1980	8.0	--
DEC. 01-31	.01	.03	220	1600	2.18	5.18	810	650	2.6	2020	8.1	--
JAN. 01-31	.02	.03	140	1520	2.07	5.34	770	620	2.8	2000	7.9	--
FEB. 01-28	.02	.03	150	1550	2.11	6.70	800	650	2.8	2000	7.9	--
MAR. 01-31	.02	.03	140	1560	2.12	5.90	840	700	2.4	2040	7.9	--
APR. 01-30	.00	.02	150	1550	2.11	5.86	820	680	2.4	2050	8.1	--
MAY 01-31	.00	.01	160	1480	2.01	408	770	630	2.5	1020	7.8	--
JUNE 01-30	.03	.08	300	1510	2.05	7.75	770	640	2.7	1980	8.0	--
JULY 01-31	.02	.10	150	1540	2.09	5.82	800	660	2.6	2000	7.9	--
AUG. 01-31	.06	.06	150	1470	2.00	5.56	800	670	2.6	2020	8.0	--
SEP. 01-30	.10	.18	160	1480	2.01	5.59	780	640	2.7	2010	8.0	--
WTD. AVG.	.00	.02	162	1490	2.02	--	773	632	2.5	1150	7.8	--
TIME WTD. AVG.	.03	.05	167	1530	2.08	--	792	647	2.6	1930	8.0	--
TOT. LOAD (TONS)	.04	.15	2	14600	--	--	--	--	--	--	--	--
ANALYSES OF ADDITIONAL SAMPLES												
OCT. 12...	.03	.04	150	1480	2.01	5.19	770	630	2.5	2000	8.0	14.0
DEC. 01...	.04	.07	150	1540	2.09	4.53	790	630	2.6	2040	7.5	6.0
FEB. 20...	.02	.02	170	1720	2.34	6.07	900	730	2.8	2190	7.9	6.0
MAR. 21...	.00	.02	180	1590	2.16	258	900	750	2.3	2110	7.6	6.0
APR. 18...	.01	.02	160	1620	2.20	5.77	870	720	2.5	2050	7.9	9.5
MAY 15...	.01	.01	170	1610	2.19	678	820	690	2.7	2020	8.1	12.0
JUNE 12...	.00	.00	160	1450	1.97	7.32	780	660	2.5	1990	8.0	25.5
JULY 09...	.01	.03	180	1540	2.09	5.78	810	670	2.6	2000	8.0	23.0
AUG. 06...	.01	.01	170	1510	2.05	5.79	810	680	2.6	1980	7.5	28.0

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2140	2120	2050	2080	2130	2100	2100	2000	2100	2050	2000	2000
2	2130	2120	2200	2080	2130	2100	2120	1980	2040	2060	2000	2000
3	2140	2120	2100	2080	2150	2100	2130	1980	2060	2060	2000	2000
4	2120	2120	2180	2080	2140	2100	2130	1980	2080	2060	2020	2000
5	2120	2120	2180	2070	2130	2100	2150	2000	2080	2060	2020	1990
6	2120	2110	2050	2070	2140	2100	2150	1990	2060	2080	1990	1980
7	2110	2110	2150	2070	2100	2100	2150	1990	2080	2100	2000	1980
8	2110	2110	2130	2080	2110	2100	2150	1990	2060	2100	2000	1980
9	2110	2050	2100	2130	2110	2090	2150	1990	2060	2100	2020	1860
10	2110	2090	1980	2140	2120	2140	2150	2080	2060	2080	2020	2050
11	2150	2110	2150	2120	2100	2130	2150	2080	2060	2080	2010	2060
12	2150	2110	2100	2110	2100	2130	2150	2080	2060	2060	2000	2050
13	2150	2110	2100	2080	2100	2120	2150	2080	2060	2060	2010	2050
14	2150	2130	2100	2070	2100	2130	2150	2080	2100	2060	2010	2040
15	2150	2110	2080	2050	2050	2130	2150	2080	2060	2080	2000	2050
16	2100	2110	2080	2060	2050	2130	2150	1980	2060	2080	2000	2050
17	2100	2100	2100	2140	2050	2130	2150	1980	2080	2080	2000	2040
18	2100	2110	2080	2130	2050	2130	2150	1980	2080	2100	2000	2020
19	2100	2120	2080	2150	2060	2130	2120	1980	2060	2070	2000	2010
20	1990	2110	2050	2160	2100	2140	2120	2040	2060	2080	2000	1970
21	2140	2140	2130	2150	2100	2140	2100	2040	2080	2100	1990	2000
22	2120	2130	2100	2150	2090	2140	2100	2030	2060	2100	1980	2000
23	2120	2130	2120	2050	2090	2140	2100	2030	2080	2090	1980	2000
24	2100	2110	2100	2050	2090	2130	2110	2030	2060	2100	1990	2000
25	2100	2110	2180	2050	2090	2130	2110	2030	2080	2100	1990	2000
26	2100	2000	2170	2050	2090	2130	2100	2030	2060	2100	2000	2000
27	2100	1950	2060	2050	2090	2130	2100	2030	2100	2030	2000	2000
28	2040	1950	2050	2060	2080	2130	2100	2030	2100	2030	2000	2000
29	2040	1950	2050	2080	---	2120	2050	2030	2100	2030	2000	2000
30	2040	1950	2060	2080	---	2120	2110	2020	2100	2030	2000	2000
31	2040	---	2050	2080	---	2120	---	2020	---	2030	2000	---
AVG	2110	2090	2100	2090	2100	2120	2130	2020	2070	2070	2000	2010

06401500 CHEYENNE RIVER BELOW ANGOSTURA DAM, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.0	10.0	3.0	2.0	4.0	6.0	7.0	13.0	22.0	26.0	27.0	25.0
2	12.0	9.0	2.0	2.0	3.0	6.0	6.0	12.0	21.0	25.0	29.0	20.0
3	11.0	8.0	1.0	1.0	4.0	5.0	6.0	13.0	18.0	28.0	27.0	---
4	10.0	8.0	0.0	1.0	4.0	6.0	6.0	12.0	22.0	28.0	28.0	21.0
5	7.0	8.0	0.0	2.0	3.0	6.0	6.0	12.0	23.0	26.0	25.0	26.0
6	7.0	8.0	0.0	2.0	2.0	7.0	7.0	13.0	24.0	27.0	25.0	24.0
7	6.0	8.0	0.0	1.0	2.0	7.0	7.0	13.0	24.0	29.0	28.0	24.0
8	8.0	7.0	0.0	1.0	3.0	7.0	8.0	12.0	25.0	30.0	27.0	22.0
9	10.0	7.0	0.0	1.0	3.0	7.0	8.0	10.0	24.0	27.0	25.0	25.0
10	14.0	6.0	0.0	0.0	2.0	8.0	9.0	11.0	26.0	27.0	26.0	22.0
11	16.0	6.0	0.0	0.0	3.0	9.0	9.0	9.0	26.0	29.0	28.0	20.0
12	12.0	5.0	0.0	0.0	3.0	8.0	10.0	9.0	27.0	26.0	27.0	17.0
13	10.0	4.0	0.0	2.0	4.0	9.0	10.0	8.0	27.0	27.0	26.0	18.0
14	10.0	4.0	0.0	2.0	4.0	8.0	10.0	8.0	26.0	29.0	28.0	20.0
15	9.0	3.0	1.0	1.0	3.0	7.0	11.0	8.0	24.0	27.0	26.0	17.0
16	9.0	2.0	1.0	1.0	4.0	8.0	11.0	9.0	21.0	26.0	27.0	15.0
17	9.0	0.0	2.0	0.0	4.0	9.0	12.0	8.0	18.0	26.0	27.0	16.0
18	9.0	0.0	2.0	0.0	3.0	10.0	12.0	9.0	13.0	24.0	29.0	16.0
19	8.0	0.0	2.0	0.0	4.0	10.0	12.0	10.0	17.0	22.0	28.0	18.0
20	8.0	0.0	2.0	0.0	4.0	10.0	13.0	9.0	23.0	22.0	29.0	20.0
21	8.0	0.0	3.0	0.0	5.0	10.0	13.0	10.0	25.0	24.0	30.0	17.0
22	8.0	0.0	3.0	0.0	5.0	9.0	14.0	11.0	22.0	26.0	28.0	16.0
23	8.0	0.0	3.0	2.0	5.0	10.0	14.0	10.0	25.0	24.0	25.0	18.0
24	8.0	0.0	3.0	3.0	5.0	11.0	13.0	9.0	28.0	24.0	27.0	20.0
25	8.0	0.0	4.0	4.0	6.0	11.0	14.0	9.0	28.0	23.0	28.0	17.0
26	8.0	0.0	4.0	5.0	7.0	12.0	14.0	10.0	24.0	25.0	25.0	18.0
27	6.0	0.0	4.0	4.0	7.0	12.0	15.0	9.0	26.0	26.0	27.0	16.0
28	5.0	0.0	3.0	3.0	8.0	13.0	14.0	9.0	28.0	24.0	29.0	17.0
29	4.0	1.0	3.0	2.0	---	10.0	12.0	9.0	28.0	23.0	28.0	16.0
30	3.0	2.0	2.0	2.0	---	8.0	13.0	15.0	27.0	23.0	27.0	22.0
31	3.0	---	2.0	3.0	---	7.0	---	16.0	---	24.0	25.0	---
AVG	8.5	3.5	1.5	1.5	4.0	8.5	10.5	10.5	24.0	25.5	27.0	B 19.5

B Based on 29 days of data.

06402600 CHEYENNE RIVER NEAR BUFFALO GAP, S. DAK.

LOCATION.--Lat 43°30'05", long 103°04'23", in SW¼NE¼ sec.29, T.6 S., R.9 E., Custer County, 6.0 mi (9.6 km) downstream from gaging station, 5.8 mi (9.3 km) upstream from Cottonwood Creek and 12 mi (19 km) east of Buffalo Gap.

DRAINAGE AREA.--9,810 mi² (25,410 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1973.
Water temperatures: October 1968 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 1,900 mg/l Nov. 1-30; minimum, 1,680 mg/l Feb. 1-28.
Hardness: Maximum, 980 mg/l Nov. 1-30; minimum, 840 mg/l June 1 to July 31.
Specific conductance: Maximum daily, 2,580 micromhos Nov. 21; minimum daily, 2,200 micromhos Sept. 14, 21, 27.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	66	13	250	74	180	15	208	1000	110	.7	.92
NOV. 01-30	--	71	13	260	81	210	18	211	1100	110	.6	1.4
DEC. 01-31	--	68	12	240	73	190	14	204	980	110	.5	1.3
JAN. 01-31	--	65	10	250	71	180	13	205	960	110	.6	.99
FEB. 01-28	--	68	12	240	72	180	13	206	950	108	.7	1.3
MAR. 01-31	--	66	9.4	250	76	190	11	210	1000	110	.7	.60
APR. 01-30	--	65	11	250	80	200	12	220	1100	110	.7	.05
MAY 01-31	--	170	7.8	230	72	200	13	185	1000	110	.7	.21
JUNE 01-30	--	53	11	220	71	210	13	180	1000	110	.6	.16
JULY 01-31	--	46	15	220	70	220	14	169	1000	120	.6	.45
AUG. 01-31	--	58	8.7	220	74	210	18	179	960	120	.6	.52
SEP. 01-30	--	91	16	220	74	240	19	170	980	120	.7	.72
WTD. AVG.	--	--	11	237	74	199	14	195	999	111	.7	.72
TIME WTD. AVG.	--	74	12	237	74	199	14	196	999	112	.6	.76
TOT. LOAD (TONS)	--	--	817	17300	5390	14500	1050	14200	72900	8130	47	53

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 13...	1200	A 61	13	240	78	200	16	233	1000	110	.6	.86
NOV. 17...	1200	A 70	12	260	75	190	14	246	960	110	.7	1.3
FEB. 20...	1300	A 110	8.7	250	71	170	14	236	880	91	.5	.86
MAR. 02...	1300	A 60	6.8	240	70	170	13	208	990	100	.7	.53
APR. 18...	1430	A 55	6.4	250	72	190	15	200	970	100	.6	.34
MAY 16...	1130	A 240	7.9	240	67	190	9.2	189	980	110	.5	.21
JUNE 12...	1030	A 65	7.8	220	67	190	13	189	900	110	1.0	.10
JULY 09...	1400	A 29	7.8	210	69	200	6.9	163	970	120	.6	.06
AUG. 06...	0945	A 53	6.6	230	74	210	13	198	970	120	.5	.23
SEP. 27...	1200	A 78	11	230	79	190	15	202	950	110	.5	.60

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Discharge at time of sampling.

06402600 CHEYENNE RIVER NEAR BUFFALO GAP, S. DAK.--Continued

EXTREMES.--1972-73:--Continued
Water temperatures: Maximum, 24.0°C July 13-20, Sept. 13-18; minimum, freezing point on many days during October to February.

Period of record:
Dissolved solids (1968-69, 1970-73): Maximum, 1,930 mg/l May 1-23, Dec. 1-31, 1971; minimum, 1,120 mg/l June 1-8, 1971.
Hardness (1968-69, 1970-73): Maximum, 1,000 mg/l Dec. 1-31, 1970; minimum, 550 mg/l June 1-8, 1971.
Specific conductance: Maximum daily, 3,140 micromhos Jan. 13, 1971; minimum daily, 1,530 micromhos June 1, 4, 6, 7, 1971.
Water temperatures: Maximum, 32.0°C on several days during July to August 1969; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Minimum observed during water year: Dissolved solids, 1,600 mg/l June 12; hardness, 810 mg/l July 9; specific conductance, daily, 2,100 micromhos May 16. Additional samples collected for more comprehensive definition of water quality.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.03	.03	310	1750	2,38	312	930	760	2,6	2210	8,0	--
NOV. 01-30	.01	.02	260	1900	2,58	364	980	810	2,9	2390	7,9	--
DEC. 01-31	.03	.04	290	1690	2,30	310	900	730	2,8	2200	7,9	--
JAN. 01-31	.03	.03	270	1700	2,31	298	920	750	2,6	2190	7,8	--
FEB. 01-28	.00	.00	270	1680	2,28	308	900	730	2,6	2110	7,6	--
MAR. 01-31	.00	.02	280	1750	2,38	312	940	770	2,7	2260	8,0	--
APR. 01-30	.01	.02	310	1880	2,56	330	950	770	2,8	2330	8,1	--
MAY 01-31	.00	.02	300	1730	2,35	794	870	720	3,0	2270	7,8	--
JUNE 01-30	.02	.04	300	1730	2,35	248	840	690	3,2	2230	7,9	--
JULY 01-31	.03	.05	320	1750	2,38	217	840	700	3,3	2250	7,8	--
AUG. 01-31	.03	.16	290	1700	2,31	266	850	710	3,1	2310	8,0	--
SEP. 01-30	.04	.15	320	1740	2,37	428	850	710	3,3	2340	7,9	--
WTD. AVG.	.02	.05	294	1750	2,38	--	896	737	2,9	2260	7,9	--
TIME WTD. AVG.	.02	.05	293	1750	2,38	--	897	737	2,9	2260	7,9	--
TOT. LOAD (TONS)	1,3	3,3	21	128000	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 13...	.03	.06	350	1780	2,42	297	920	730	2,9	2420	7,9	8,0
NOV. 17...	.01	.03	290	1750	2,38	331	960	760	2,7	2280	7,7	1,0
FEB. 20...	.02	.03	250	1610	2,19	478	920	720	2,4	2220	8,1	,0
MAR. 02...	.02	.02	270	1700	2,31	279	890	720	2,5	2130	8,1	10,0
APR. 18...	.03	.04	320	1700	2,31	256	920	760	2,7	2190	8,0	10,0
MAY 16...	.01	.07	220	1700	2,31	1100	880	720	2,8	2100	8,0	15,5
JUNE 12...	.00	.02	290	1600	2,18	283	830	670	2,9	2150	8,0	20,0
JULY 09...	.01	.06	330	1670	2,27	131	810	670	3,1	2170	8,1	29,0
AUG. 06...	.02	.09	320	1720	2,34	248	880	720	3,1	2200	7,4	21,5
SEP. 27...	.00	.04	340	1690	2,30	357	900	730	2,8	2340	7,9	13,0

06402600 CHEYENNE RIVER NEAR BUFFALO GAP, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 24°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	UCT	NUV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2340	2320	2550	2280	2250	2350	2480	2460	2260	2250	2250	2240
2	2320	2320	2530	2280	2250	2380	2500	2370	2260	2260	2220	2250
3	2300	2320	2530	2260	2260	2360	2480	2340	2280	2280	2240	2290
4	2330	2330	2530	2260	2300	2360	2480	2370	2280	2280	2230	2230
5	2250	2330	2520	2260	2290	2360	2480	2370	2220	2280	2210	2300
6	2280	2300	2520	2260	2280	2300	2480	2350	2320	2280	2250	2210
7	2280	2310	2520	2260	2280	2340	2470	2350	2260	2280	2240	2240
8	2280	2300	2520	2260	2280	2340	2460	2370	2360	2280	2240	2310
9	2260	2500	2300	2260	2290	2330	2460	2370	2360	2280	2240	2250
10	2240	2460	2300	2260	2330	2300	2460	2380	2320	2300	2240	2230
11	2280	2500	2280	2280	2320	2300	2470	2350	2380	2300	2230	2230
12	2280	2500	2280	2260	2350	2490	2470	2290	2300	2320	2250	2290
13	2280	2500	2280	2260	2340	2490	2470	2240	2220	2300	2250	2260
14	2270	2500	2280	2250	2330	2490	2500	2310	2300	2340	2250	2200
15	2270	2550	2290	2250	2350	2500	2550	2300	2260	2310	2240	2260
16	2270	2510	2290	2250	2340	2450	2450	2360	2260	2340	2240	2220
17	2270	2520	2290	2260	2340	2500	2470	2280	2280	2310	2240	2210
18	2260	2510	2290	2260	2320	2500	2470	2280	2280	2350	2250	2210
19	2260	2500	2290	2260	2340	2500	2480	2340	2260	2310	2250	2220
20	2240	2500	2290	2260	2330	2490	2520	2250	2280	2320	2250	2210
21	2280	2580	2290	2260	2350	2490	2520	2380	2280	2390	2240	2200
22	2280	2550	2290	2260	2350	2490	2520	2330	2280	2300	2220	2260
23	2280	2530	2290	2260	2340	2490	2490	2300	2280	2350	2230	2250
24	2270	2520	2290	2260	2330	2490	2460	2300	2280	2340	2240	2240
25	2270	2520	2290	2270	2260	2500	2550	2270	2300	2350	2240	2220
26	2270	2520	2290	2260	2260	2460	2540	2260	2280	2300	2240	2220
27	2270	2500	2290	2270	2280	2510	2540	2260	2260	2350	2240	2200
28	2270	2440	2290	2280	2280	2510	2540	2260	2280	2370	2220	2210
29	2270	2510	2300	2280	---	2500	2480	2270	2280	2350	2230	2220
30	2260	2510	2300	2280	---	2460	2510	2280	2280	2380	2250	2240
31	2260	---	2300	2280	---	2490	---	2310	---	2350	2250	---
AVG	2280	2460	2350	2260	2310	2440	2490	2320	2280	2320	2240	2240

06402600 CHEYENNE RIVER NEAR BUFFALO GAP, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	0.0	0.0	0.0	2.0	4.0	2.0	---	6.0	14.0	20.0	22.0
2	20.0	0.0	0.0	0.0	2.0	2.0	2.0	4.0	4.0	14.0	20.0	22.0
3	20.0	0.0	0.0	0.0	2.0	2.0	2.0	4.0	4.0	14.0	20.0	22.0
4	18.0	0.0	0.0	0.0	0.0	2.0	4.0	4.0	4.0	18.0	20.0	22.0
5	18.0	0.0	0.0	0.0	0.0	4.0	4.0	4.0	4.0	18.0	22.0	22.0
6	18.0	2.0	0.0	0.0	0.0	7.0	2.0	4.0	6.0	20.0	22.0	22.0
7	18.0	2.0	0.0	2.0	0.0	6.0	2.0	4.0	6.0	20.0	22.0	22.0
8	16.0	0.0	0.0	2.0	2.0	4.0	2.0	4.0	6.0	20.0	22.0	22.0
9	16.0	0.0	0.0	2.0	2.0	4.0	4.0	2.0	8.0	20.0	22.0	22.0
10	16.0	0.0	0.0	2.0	2.0	4.0	4.0	2.0	8.0	20.0	22.0	22.0
11	16.0	0.0	0.0	2.0	2.0	4.0	4.0	2.0	8.0	20.0	22.0	22.0
12	16.0	0.0	0.0	2.0	2.0	4.0	4.0	2.0	8.0	20.0	22.0	22.0
13	12.0	0.0	0.0	2.0	2.0	4.0	4.0	2.0	8.0	24.0	22.0	24.0
14	12.0	0.0	0.0	2.0	4.0	4.0	4.0	2.0	8.0	24.0	22.0	24.0
15	12.0	0.0	0.0	2.0	4.0	4.0	4.0	2.0	10.0	24.0	22.0	24.0
16	10.0	0.0	0.0	2.0	4.0	4.5	4.0	3.0	10.0	24.0	22.0	24.0
17	10.0	0.0	0.0	2.0	4.0	5.0	4.0	3.0	10.0	24.0	22.0	24.0
18	10.0	0.0	0.0	2.0	4.0	5.0	2.0	2.0	10.0	24.0	22.0	24.0
19	8.0	0.0	0.0	2.0	4.0	6.0	2.0	2.0	10.0	24.0	22.0	---
20	8.0	0.0	0.0	2.0	4.0	6.0	2.0	4.0	10.0	24.0	22.0	---
21	8.0	0.0	0.0	2.0	4.0	6.0	2.0	4.0	10.0	20.0	22.0	---
22	8.0	0.0	0.0	0.0	4.0	6.0	4.0	4.0	10.0	20.0	22.0	---
23	6.0	0.0	0.0	0.0	4.0	6.0	4.0	4.0	10.0	20.0	22.0	---
24	4.0	0.0	0.0	0.0	6.0	6.0	2.0	4.0	10.0	20.0	22.0	---
25	4.0	0.0	0.0	0.0	2.0	6.0	2.0	4.0	10.0	20.0	22.0	---
26	4.0	0.0	0.0	0.0	4.0	6.0	4.0	2.0	12.0	20.0	22.0	---
27	2.0	0.0	0.0	2.0	6.0	6.0	4.0	2.0	12.0	20.0	22.0	---
28	2.0	0.0	0.0	2.0	6.0	6.0	4.0	2.0	12.0	20.0	22.0	---
29	0.0	0.0	0.0	2.0	---	6.5	4.0	4.0	12.0	20.0	22.0	---
30	0.0	0.0	0.0	2.0	---	6.0	4.0	5.0	12.0	20.0	22.0	---
31	0.0	---	0.0	2.0	---	6.0	---	5.0	---	20.0	22.0	---
AVG	10.5	0.0	0.0	1.5	3.0	5.0	3.0	B 3.0	8.5	20.5	21.5	---

B Based on 30 days of data.

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, S. DAK.
(Hydrologic benchmark and radiochemical station)

LOCATION.--Lat 44°00'49", long 103°49'48", in SW¼ sec.25, T.1 N., R.2 E., Pennington County, at gaging station, on right bank 50 ft (15 m) downstream from highway bridge, 250 ft (76 m) downstream from South Fork Castle Creek, 600 ft (183 m) upstream from high-water line of Deerfield Reservoir, 2.5 mi (4.0 km) southwest of Deerfield Dam, and 14 mi (23 km) northwest of Hill City.

DRAINAGE AREA.--83 mi² (215 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1973.
Water temperatures: May 1964 to September 1973.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 24...	1300	12	8.8	56	29	1.1	1.2	311	6.6	.9	.3	.13
NOV. 27...	1330	2.1	9.6	58	29	1.4	1.2	321	8.4	1.4	.2	.23
DEC. 18...	1400	10	9.5	58	29	1.8	1.1	323	8.6	2.6	.1	.26
JAN. 23...	1145	12	9.5	59	29	1.3	1.7	338	7.0	1.5	.3	.21
FEB. 21...	1100	7.8	9.0	59	30	.9	1.0	327	9.1	1.3	.1	.21
MAR. 27...	1230	12	8.7	56	29	1.5	1.3	319	6.0	1.4	.1	.18
APR. 23...	1200	15	9.0	51	27	1.4	1.7	295	11	1.5	.2	.25
MAY 21...	1300	16	8.0	55	29	1.2	1.1	303	7.6	1.4	.2	.05
JUNE 18...	1200	16	8.4	55	29	1.6	1.0	298	8.4	2.1	.2	.08
JULY 24...	1300	13	8.1	54	29	2.1	.9	281	12	2.1	.1	.03
AUG. 28...	1300	11	8.4	49	28	1.4	1.0	180	9.2	1.6	.0	.00
SEP. 25...	1130	11	9.8	59	30	2.0	1.8	293	7.8	.6	.1	.02

DATE	TIME	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)
DEC. 18...	1400	1	20	0	0	0	1	9	1	20

PESTICIDES

DATE	TIME	ALDRIN (UG/L) (39330)	CHLOR-DANE (UG/L) (39350)	DDD (UG/L) (39360)	DDE (UG/L) (39365)	DDT (UG/L) (39370)	DI-AZINON (UG/L) (39570)	DI-ELDRIN (UG/L) (39380)	ENDRIN (UG/L) (39390)	HEPTA-CHLOR (UG/L) (39410)
OCT. 24...	1300	.00	.0	.00	.00	.00	.00	.00	.00	.00

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, S. DAK.--Continued

EXTREMES.--1972-73:
Water temperatures: Maximum, 20.0°C July 1, 5, 11; minimum, freezing point on many days during November to April.

Period of record:
Water temperatures: Maximum, 22.0°C July 17, 1969, June 25, 1971; minimum, freezing point on many days during winter period.

REMARKS.--Periodic samples obtained for analysis of suspended-sediment concentration most years.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT., 26...	.03	.03	20	261	.36	8.39	260	6	.0	452	8.1	3.0
NOV., 27...	.04	.05	0	268	.36	1.49	260	1	.0	464	7.9	.0
DEC., 18...	.05	.06	20	271	.37	7.46	260	5	.0	451	8.2	.0
JAN., 23...	.05	.05	50	277	.38	9.12	270	0	.0	476	8.2	.0
FEB., 21...	.02	.03	10	273	.37	5.75	270	3	.0	474	8.3	.0
MAR., 27...	.00	.14	10	262	.36	8.56	260	0	.0	462	8.1	1.0
APR., 23...	.03	.05	80	249	.34	10.1	240	0	.0	444	8.2	6.0
MAY 21...	.01	.05	10	253	.34	11.2	260	8	.0	453	8.4	9.5
JUNE 18...	.02	.05	10	253	.34	11.1	260	12	.0	439	7.8	8.0
JULY 24...	.02	.02	10	247	.34	8.58	250	24	.1	418	8.3	12.0
AUG., 28...	.01	.02	20	201	.27	5.59	200	20	.0	402	8.4	15.5
SEP., 26...	.04	.04	30	268	.36	8.03	270	11	.1	466	8.4	7.5

DATE	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL MERCURY (HG) (UG/L) (71900)
DEC., 18...	0	0	0	60	1.7	0	0	1	1.6

PESTICIDES

DATE	HEPTA-CHLOR EPOXIDE (UG/L) (39420)	LINDANE (UG/L) (39340)	MALA-THION (UG/L) (39530)	METHYL PARA-THION (UG/L) (39600)	PARA-THION (UG/L) (39540)	2,4-D (UG/L) (39730)	2,4,5-T (UG/L) (39740)	SILVEX (UG/L) (39760)	PCB (UG/L) (39516)
OCT., 26...	.00	.00	.00	.00	.00	.00	.00	.00	.0

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, S. DAK.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS- SOLVED GROSS ALPHA AS U-NAT. (UG/L) (80030)	SUS- PENDED GROSS ALPHA AS U-NAT. (UG/L) (80040)	DIS- SOLVED GROSS BETA AS SR90 /Y90 (PC/L) (80050)	SUS- PENDED GROSS BETA AS SR90 /Y90 (PC/L) (80060)	DIS- SOLVED GROSS BETA AS CS-137 (PC/L) (03515)	SUS- PENDED GROSS BETA AS CS-137 (PC/L) (03516)	DIS- SOLVED RA-226 (PLAN- CHET COUNT) (PC/L) (09510)	DIS- SOLVED NATURAL URANIUM (U) (UG/L) (22703)
OCT. 24...	1300	5.4	<.4	1.9	<.4	2.4	<.6	<.1	.8

FIELD DETERMINATIONS

DATE	TIME	DIS- CHARGE (CFS) (00060)	TEMPER- ATURE (DEG C) (00010)	AIR TEMP- ERATURE (DEG C) (00020)	DIS- SOLVED OXYGEN (MG/L) (00300)	BIO- CHEM- ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME- DIATE COLI- FORM (COL. PER 100 ML) (31501)	FECAL COLI- FORM (COL. PER 100 ML) (31616)
OCT. 24...	1300	12	3.0	9.0	11.1	1.0	8.3	<0	<0
NOV. 27...	1330	2.1	.0	-7.0	10.7	.8	8.4	16	7
DEC. 18...	1400	10	.0	2.0	10.8	.6	8.4	600	200
JAN. 23...	1130	12	.0	6.0	11.8	.8	8.7	6	--
FEB. 21...	1100	7.8	1.0	5.0	11.7	1.0	8.3	57	12
MAR. 27...	1230	12	1.0	2.0	10.7	1.2	8.2	<0	--
APR. 23...	1200	15	6.0	20.0	10.2	1.4	8.1	25	30
MAY 21...	1300	16	11.0	14.0	--	1.2	8.1	50	10
JUNE 18...	1200	16	8.0	12.5	10.4	1.4	8.3	28	60
JULY 24...	1300	13	12.0	16.0	10.0	1.0	8.4	620	--
AUG. 20...	1300	11	15.5	23.5	9.4	1.2	8.4	500	20
SEP. 25...	1130	11	7.5	22.0	9.9	.8	8.2	40	<0

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER- ATURE (DEG C) (00010)	INSTAN- TANEOUS DIS- CHARGE (CFS) (00061)	SUS- PENDED SEDI- MENT (MG/L) (80154)	SUS- PENDED SEDI- MENT DIS- CHARGE (T/DAY) (80155)
OCT. 24...	1300	3.0	12	23	.75
NOV. 27...	1330	.0	2.1	22	.12
DEC. 19...	1400	.0	10	119	3.2
JAN. 23...	1150	.0	12	19	.62
FEB. 21...	1100	.0	7.8	30	.63
MAR. 27...	1230	1.0	12	71	2.3
APR. 23...	1200	6.0	15	69	2.8
MAY 21...	1300	9.5	16	45	1.9
JUNE 18...	1200	8.0	16	56	2.4
JULY 24...	1300	12.0	13	47	1.6
AUG. 20...	1300	15.5	11	42	1.2
SEP. 25...	1130	7.5	11	25	.74

06409000 CASTLE CREEK ABOVE DEERFIELD RESERVOIR, NEAR HILL CITY, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973
(RECORDER WITH TEMPERATURE ATTACHMENT, CONTINUOUS ETHYL ALCOHOL-ACTUATED THERMOGRAPH)

	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	6.0	5.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	5.5	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	5.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	5.5	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	6.0	5.5	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	6.0	5.5	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	5.0	4.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	4.5	4.5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	5.5	4.5	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	5.5	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11	5.5	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12	5.5	5.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	5.5	5.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	5.0	5.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	4.5	4.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	4.0	4.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	4.0	3.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	3.5	3.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
19	3.5	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
20	3.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
21	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
22	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
23	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.5
24	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
25	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.5
26	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.5
27	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.5
28	2.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
29	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---	1.0	0.5
30	1.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	---	---	2.0	0.5
31	0.5	0.5	---	---	0.0	0.0	0.0	0.0	---	---	2.0	0.5
AVG	6.0	0.5	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	2.0	0.5	5.5	1.5	15.5	7.0	20.0	13.5	14.5	9.5	13.5	10.0
2	1.5	0.5	5.0	1.5	13.5	9.0	18.5	11.0	15.0	10.0	13.0	10.5
3	1.0	0.5	8.0	1.0	13.5	6.5	19.0	10.5	15.5	10.5	10.5	9.5
4	1.0	0.5	8.0	4.0	11.0	6.0	19.0	11.0	15.0	11.0	11.5	8.0
5	3.5	0.5	8.0	4.0	12.0	7.0	20.0	11.0	16.5	12.0	13.0	7.0
6	3.5	0.5	6.5	4.5	14.5	7.0	19.0	11.5	15.0	11.0	13.5	8.5
7	1.0	0.0	8.0	3.5	15.0	7.0	19.5	13.0	17.0	11.0	14.0	10.5
8	0.0	0.0	8.0	4.0	16.5	8.5	19.5	12.0	16.5	11.5	13.0	9.5
9	0.0	0.0	7.0	4.5	19.0	10.0	19.5	12.0	15.5	11.0	14.5	11.0
10	0.0	0.0	9.0	3.5	18.0	10.5	19.0	13.0	16.0	10.5	12.0	10.0
11	2.0	0.0	8.5	4.0	15.5	11.0	20.0	13.0	17.0	11.5	11.0	10.0
12	3.5	1.0	8.5	1.0	18.0	9.5	19.5	13.5	15.0	12.0	12.0	9.0
13	4.0	1.0	9.5	1.0	18.5	11.0	15.0	11.5	16.0	10.5	11.0	8.5
14	4.0	1.5	9.0	1.5	16.5	11.5	15.0	9.0	17.0	13.0	10.0	6.5
15	4.5	1.5	11.5	4.0	15.0	9.0	17.0	9.5	17.0	11.5	6.5	5.5
16	5.0	1.5	11.5	4.5	13.5	8.0	18.5	11.0	15.5	11.5	5.5	5.5
17	5.5	1.5	12.0	6.0	13.0	7.0	18.5	11.5	16.5	12.0	9.0	5.5
18	6.0	4.5	13.5	5.5	10.0	5.5	17.0	13.0	18.0	12.0	9.0	5.0
19	5.0	1.5	15.0	5.5	9.5	5.5	15.5	11.5	---	---	8.5	6.0
20	5.5	2.0	15.0	8.5	11.5	6.5	11.5	11.0	18.5	---	10.0	7.0
21	2.0	2.0	11.5	8.0	---	---	13.0	10.5	18.0	13.5	9.5	8.0
22	5.5	3.0	13.5	5.0	---	---	15.5	11.5	16.0	14.0	9.0	5.0
23	6.0	3.0	11.5	5.5	---	---	15.5	11.5	18.0	13.5	10.5	6.5
24	6.0	5.5	10.0	6.5	---	---	14.5	10.5	17.0	14.5	10.5	6.5
25	5.5	5.0	7.0	5.5	---	---	15.5	10.0	17.0	12.0	8.5	5.5
26	5.0	3.0	7.0	5.5	---	---	16.0	10.0	18.0	13.0	8.0	6.5
27	9.0	3.0	6.0	5.0	---	---	15.5	10.5	16.0	11.5	8.0	4.5
28	8.5	5.0	10.0	6.0	---	---	14.5	11.0	16.0	12.0	6.5	4.5
29	6.0	5.0	7.0	5.5	16.5	12.0	16.5	11.0	15.5	10.5	9.0	5.0
30	5.0	4.5	14.0	5.0	19.0	11.0	15.5	11.0	15.0	10.5	9.0	4.5
31	---	---	15.5	6.0	---	---	13.5	10.0	18.0	10.5	---	---
AVG	9.0	0.0	15.5	1.0	---	---	20.0	9.0	A 18.5	B 9.5	14.5	4.5

A Based on 30 days of data.
B Based on 29 days of data.

06411500 RAPID CREEK BELOW PACTOLA DAM, S. DAK.

LOCATION.--Lat 44°04'36", long 103°28'54", in SW¼NE¼ sec.2, T.1 N., R.5 E., Pennington County, at gaging station, on right bank 2,000 ft (610 m) downstream from Pactola Dam, 3.9 mi (6.3 km) upstream from Deer Creek, and 13 mi (21 km) west of Rapid City.

DRAINAGE AREA.--320 mi² (829 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1973.
Water temperatures: October 1968 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 217 mg/l Mar. 1-31; minimum, 200 mg/l Nov. 1-30.
Hardness: Maximum, 190 mg/l Jan. 1 to Mar. 31; minimum, 170 mg/l Nov. 1-30, May 1 to Sept. 30.
Specific conductance: Maximum daily, 380 micromhos Jan. 18-20, 29-31, Feb. 9, 10, 26-28, Mar. 2, 9; minimum daily, 260 micromhos Nov. 30.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	48	9.2	41	19	2.9	2.6	181	39	3.0	.6	.10
NOV. 01-30	--	24	9.5	36	19	3.0	2.6	174	42	1.8	.4	.03
DEC. 01-31	--	23	10	40	19	3.2	2.7	191	44	2.0	.6	.13
JAN. 01-31	--	24	11	44	20	3.5	2.6	186	41	1.4	.3	.05
FEB. 01-28	--	21	11	42	20	3.6	2.7	188	41	1.5	.3	.15
MAR. 01-31	--	14	11	43	20	3.4	2.5	186	43	1.4	.3	.20
APR. 01-30	--	42	10	40	19	3.4	2.5	176	41	1.5	.3	.04
MAY 01-31	--	126	9.4	38	19	3.3	2.5	176	44	2.1	.3	.05
AUG. 01-31	--	59	10	38	18	3.3	2.5	174	47	1.9	.3	.03
SEP. 01-30	--	44	10	38	18	3.9	2.6	175	45	1.5	.1	.06
WTD. AVG.	--	--	9.8	39	19	3.3	2.6	178	43	1.9	.3	.07
TIME WTD. AVG.	--	A 43	10	40	19	3.3	2.6	181	43	1.8	.4	.08
TOT. LOAD (TONS)	--	--	345	1300	663	117	90	6260	1520	68	12	2.3

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE (CFS)	SIO2	CA	MG	NA	K	HCO3	SO4	CL	F	N
OCT. 17...	1100	B 52	8.8	40	19	3.3	2.6	174	53	1.1	.3	.10
NOV. 27...	1345	B 23	9.5	41	19	3.2	2.5	175	35	1.3	.3	.07
FEB. 12...	1430	B 23	10	42	20	3.1	2.6	195	49	1.5	.3	.07
MAR. 21...	1515	B 14	9.7	41	20	3.1	2.6	190	48	1.3	.3	.04
APR. 09...	1430	B 14	9.4	40	20	3.5	2.2	182	49	.6	.3	.04
MAY 07...	1400	B 147	9.3	39	20	3.3	2.7	181	46	1.9	.2	.01
JUNE 05...	0900	B 70	9.4	40	19	3.1	2.4	175	39	1.2	.2	.02
JULY 30...	1615	B 62	9.6	39	19	4.0	2.4	174	46	2.4	.1	.03
AUG. 29...	1000	B 43	11	39	18	3.4	2.6	173	42	2.1	.3	.04
SEP. 26...	1430	B 41	10	38	18	3.9	2.2	171	45	1.1	.0	.04

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Mean discharge for 304 days of analysis; mean discharge for 365 days, 51 cfs.
B Discharge at time of sampling.

06411500 RAPID CREEK BELOW PACTOLA DAM, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1968-69, 1970-73): Maximum, 260 mg/l July 1 to Sept. 30, 1969; minimum, 200 mg/l Nov. 1-30, 1971, Nov. 1-30, 1973.
Hardness (1968-69, 1970-73): Maximum, 206 mg/l Jan. 1 to Mar. 31, 1969; minimum, 170 mg/l June 1-30, Aug. 1 to Sept. 30, Dec. 1-31, 1971, May 1-31, 1972, Nov. 1-30, May 1 to Sept. 30, 1973.
Specific conductance: Maximum daily, 435 micromhos Feb. 8, 17, 22, 1971; minimum daily, 238 micromhos Mar. 28-30, 1971.
Water temperatures (1968-72): Maximum, 9.0°C June 21-22, 1972; minimum, freezing point on several days during December 1968.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 225 mg/l Feb. 12. Minimum observed during water year: Dissolved solids, 198 mg/l Nov. 27. Additional samples collected for more comprehensive definition of water quality.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.03	.03	20	207	.28	26.0	180	32	.1	351	8.2	--
NOV. 01-30	.04	.04	30	200	.27	13.0	170	25	.1	328	8.0	--
DEC. 01-31	.02	.05	40	216	.29	13.4	180	21	.1	348	8.2	--
JAN. 01-31	.01	.02	20	216	.29	14.0	190	40	.1	367	8.2	--
FEB. 01-28	.01	.02	20	215	.29	12.2	190	33	.1	369	8.1	--
MAR. 01-31	.02	.03	30	217	.30	8.20	190	37	.1	368	8.0	--
APR. 01-30	.00	.01	10	205	.28	23.2	180	34	.1	359	8.1	--
MAY 01-31	.00	.00	0	206	.28	70.1	170	29	.1	348	8.1	--
AUG. 01-31	.02	.03	10	207	.28	33.0	170	26	.1	344	8.1	--
SEP. 01-30	.04	.04	20	206	.28	24.5	170	25	.1	347	8.1	--
WTD. AVG.	.02	.02	14	208	.28	--	175	29	.1	350	8.1	--
TIME WTD. AVG.	.02	.03	20	210	.28	--	179	30	.1	353	8.1	--
TOT. LOAD (TONS)	.54	.73	0	7290	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 17...	.02	.04	20	214	.29	30.5	180	35	.1	349	8.1	8.0
NOV. 27...	.01	.01	0	198	.27	12.6	180	37	.1	332	8.0	5.0
FEB. 12...	.03	.02	30	225	.31	14.5	190	27	.1	366	8.2	4.5
MAR. 21...	.00	.00	20	220	.30	8.49	180	29	.1	370	7.8	5.0
APR. 09...	.01	.02	40	215	.29	8.59	180	33	.1	361	8.0	5.0
MAY 07...	.12	.12	10	212	.29	84.1	180	31	.1	341	7.8	6.0
JUNE 05...	.01	.03	20	201	.27	30.2	180	35	.1	351	8.0	5.5
JULY 30...	.02	.03	30	208	.28	35.3	180	33	.1	345	7.9	6.0
AUG. 29...	.02	.03	20	204	.28	73.7	170	30	.1	345	8.1	8.5
SEP. 26...	.04	.05	20	203	.28	23.0	170	29	.1	345	8.1	8.0

06411500 RAPID CREEK BELOW PACTOLA DAM, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	360	365	355	370	370	370	370	335	330	330	330	330
2	360	300	355	370	370	380	370	330	330	330	330	340
3	365	365	355	370	370	370	370	330	330	330	330	340
4	360	365	350	370	370	370	370	330	330	330	330	340
5	360	355	350	370	370	370	370	330	330	330	330	340
6	355	305	345	370	370	370	370	330	330	330	330	330
7	355	310	345	370	370	370	360	330	330	330	330	330
8	355	350	340	370	370	370	360	330	330	330	330	330
9	350	350	335	370	380	380	370	330	330	330	330	330
10	345	345	335	370	380	370	370	330	330	330	330	330
11	360	360	355	370	370	370	370	330	330	330	330	340
12	360	360	355	370	370	370	370	330	330	330	330	330
13	360	275	360	370	370	370	360	330	330	330	330	330
14	360	330	360	370	370	370	360	330	330	330	330	340
15	360	325	360	370	370	370	360	325	330	330	330	330
16	360	350	360	370	370	370	360	325	330	330	330	330
17	355	345	355	370	370	370	360	325	330	330	330	330
18	355	345	355	380	370	370	360	330	330	330	330	340
19	350	325	350	380	370	370	360	330	330	330	330	330
20	345	335	345	380	370	370	360	330	330	330	330	330
21	365	290	365	370	370	370	350	330	330	330	330	330
22	365	350	370	370	370	370	350	330	330	330	330	330
23	360	350	370	370	370	370	350	330	330	330	330	330
24	360	315	365	370	370	370	350	330	330	330	330	330
25	360	350	365	370	370	370	350	330	330	330	330	330
26	360	350	360	370	380	370	350	330	330	330	330	340
27	360	345	360	370	380	370	350	330	330	330	330	330
28	355	345	360	370	380	370	350	330	330	330	330	340
29	355	340	355	380	---	370	350	330	330	330	330	340
30	350	260	350	380	---	370	350	330	330	330	330	340
31	350	---	355	380	---	370	---	330	---	330	330	---
AVG	357	335	355	372	372	371	360	330	330	330	330	334

06411500 RAPID CREEK BELOW PACTOLA DAM, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	7.0	5.0	3.0	4.0	4.0	4.0	6.0	---	---	---	---
2	8.0	7.0	5.0	3.0	4.0	4.0	4.0	---	---	---	---	---
3	8.0	7.0	5.0	3.0	4.0	4.0	4.0	6.0	---	---	---	---
4	8.0	7.0	4.0	3.0	4.0	4.0	4.0	6.0	---	---	7.5	7.0
5	8.0	7.0	4.0	3.0	4.0	4.0	4.0	6.0	---	---	7.5	7.5
6	8.0	7.0	3.0	3.0	3.0	4.0	4.0	6.0	---	---	7.5	8.0
7	8.0	7.0	3.0	3.0	3.0	4.0	4.0	6.0	---	---	7.0	7.0
8	8.0	7.0	3.0	3.0	3.0	4.0	3.0	6.0	---	---	7.0	---
9	8.0	7.0	3.0	3.0	3.0	4.0	3.0	6.0	---	---	8.0	8.5
10	8.0	7.0	3.0	3.0	3.0	4.0	3.0	6.0	---	---	8.0	8.0
11	8.0	7.0	3.0	3.0	4.0	4.0	---	6.0	---	---	7.0	7.0
12	8.0	7.0	3.0	3.0	4.0	4.0	---	6.0	---	---	6.5	8.0
13	8.0	7.0	3.0	3.0	3.0	4.0	4.0	6.0	---	---	8.0	7.5
14	8.0	7.0	3.0	4.0	4.0	---	4.0	6.0	---	---	7.0	6.5
15	8.0	7.0	3.0	4.0	3.0	---	4.0	6.0	---	---	7.0	7.0
16	8.0	7.0	3.0	4.0	3.0	---	4.0	6.0	---	---	8.0	7.0
17	8.0	7.0	3.0	4.0	4.0	---	4.0	6.0	---	---	8.0	7.5
18	8.0	7.0	3.0	4.0	3.0	---	4.0	6.0	---	---	---	8.0
19	8.0	7.0	3.0	4.0	3.0	---	4.0	6.0	---	---	---	7.0
20	8.0	6.0	3.0	4.0	3.0	4.0	4.0	6.0	---	---	7.5	8.0
21	8.0	6.0	3.0	4.0	3.0	4.0	6.0	6.0	---	---	7.0	8.0
22	8.0	6.0	3.0	4.0	4.0	4.0	6.0	6.0	---	---	7.0	8.5
23	8.0	6.0	3.0	4.0	4.0	4.0	6.0	6.0	---	---	7.0	7.5
24	8.0	6.0	3.0	4.0	4.0	4.0	6.0	6.0	---	---	8.0	8.0
25	8.0	6.0	3.0	4.0	4.0	4.0	6.0	6.0	---	---	7.0	7.5
26	7.5	6.0	5.0	4.0	4.0	4.0	6.0	6.0	---	---	7.0	7.0
27	7.5	6.0	4.0	4.0	4.0	4.0	6.0	6.0	---	---	---	8.0
28	7.5	6.0	4.0	3.0	4.0	4.0	6.0	6.0	---	---	8.0	7.0
29	7.5	6.0	4.0	3.0	---	4.0	6.0	6.0	---	---	8.0	---
30	7.5	6.0	3.0	4.0	---	4.0	6.0	6.0	---	---	8.5	---
31	7.0	---	3.0	4.0	---	4.0	---	6.0	---	---	8.0	---
AVG	8.0	6.5	3.5	3.5	3.5	C 4.0	D 4.5	E 6.0	---	---	C 7.5	F 7.5

C Based on 25 days of data.
D Based on 28 days of data.
E Based on 30 days of data.
F Based on 24 days of data.

06421500 RAPID CREEK NEAR FARMINGDALE, S. DAK.

LOCATION.--Lat 43°56'31", long 102°51'12", in SW¼SW¼SW¼ sec.19, T.1 S., R.11 E., Pennington County, at gaging station, on right bank at downstream side of bridge, 2.0 mi (3.2 km) southeast of Farmingdale and 4.8 mi (7.7 km) downstream from Antelope Creek.

DRAINAGE AREA.--602 mi² (1,559 km²).

PERIOD OF RECORD.--Chemical analyses: February to September 1953, October 1955 to September 1958, October 1968 to September 1973.
Water temperatures: October 1955 to September 1958, October 1968 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 744 mg/l Aug. 1-31; minimum, 402 mg/l May 1-31.
Hardness: Maximum, 460 mg/l Aug. 1-31; minimum, 290 mg/l May 1-31.
Specific conductance: Maximum daily, 1,260 micromhos Mar. 31; minimum daily, 530 micromhos May 14, 15.
Water temperatures: Maximum, 25.0°C Aug. 3; minimum, freezing point on many days November to March.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	70	4.7	83	35	32	5.1	248	190	25	.6	.90
NOV. 01-30	--	65	4.9	92	38	35	4.8	257	220	29	.5	1.7
DEC. 01-31	--	51	10	94	37	35	4.8	245	190	31	.5	3.0
JAN. 01-31	--	51	9.0	93	39	36	4.9	243	200	30	.5	2.9
FEB. 01-28	--	50	7.5	82	35	36	4.7	228	180	29	.5	2.6
MAR. 01-31	--	71	4.7	92	37	50	5.5	233	240	31	.6	1.8
APR. 01-30	--	102	5.5	100	41	48	6.3	218	300	28	.6	1.4
MAY 01-31	--	159	9.9	69	29	22	4.2	198	150	13	.4	1.4
JUNE 01-30	--	68	7.7	75	33	29	4.9	217	190	19	.5	1.6
JULY 01-31	--	33	13	90	40	46	6.7	248	260	27	.5	.96
AUG. 01-31	--	21	7.2	110	46	66	8.7	265	330	39	.6	1.1
SEP. 01-30	--	44	9.4	95	39	45	6.6	253	230	37	1.0	1.7
WTD. AVG.	--	--	7.6	86	36	37	5.3	230	212	25	.5	1.7
TIME WTD. AVG.	--	65	7.8	90	37	40	5.6	238	224	28	.6	1.7
TOT. LOAD (TONS)	--	--	492	5560	2320	2360	339	14800	13700	1600	35	108

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1445	A 64	2.9	79	32	27	4.6	213	170	21	.5	.36
NOV. 28...	1435	A 57	4.1	91	38	35	4.6	252	210	24	.5	2.2
FEB. 12...	1000	A 58	8.1	90	36	39	4.8	273	200	38	.5	.54
MAR. 20...	1400	A 83	7.7	83	33	37	6.3	209	210	26	.4	.48
APR. 09...	0930	A 56	2.1	120	50	57	5.4	209	350	34	.5	1.6
MAY 08...	1000	A 197	9.1	62	27	16	3.6	205	130	9.3	.3	.13
JUNE 05...	1230	A 83	7.9	84	33	27	4.9	209	190	19	.4	1.7
JULY 19...	1345	A 15	7.7	94	40	43	6.7	260	240	27	.5	.61
AUG. 27...	1450	A 35	11	110	50	68	9.4	285	330	49	.7	1.5
SEP. 26...	1100	A 53	9.4	86	34	33	4.9	237	200	26	.3	1.9

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Discharge at time of sampling.

06421500 RAPID CREEK NEAR FARMINGDALE, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1955-58, 1968-69, 1970-73): Maximum, 1,220 mg/l Sept. 12, 1969; minimum, 320 mg/l Nov. 5-7, 1956.
Hardness (1955-58, 1968-69, 1970-73): Maximum, 690 mg/l Oct. 1-7, 9-26, 1956; minimum, 250 mg/l May 1-31, 1971.
Specific conductance (1955-58, 1968-70, 1970-73): Maximum daily, 1,650 micromhos Oct. 16, 1956; minimum daily, 422 micromhos Jan. 8, 1958.
Water temperatures (1955-58, 1968-69, 1971-73): Maximum, 34.0°C June 12, 1956; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 785 mg/l Aug. 27; hardness, 510 mg/l Apr. 9. Minimum observed during water year: Dissolved solids, 360 mg/l May 8; hardness, 270 mg/l May 8. Additional samples collected for more comprehensive definition of water quality.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.68	.68	130	503	.68	95.1	350	150	.7	836	8.3	--
NOV. 01-30	.88	.88	130	561	.76	98.5	390	180	.8	851	8.2	--
DEC. 01-31	1.0	1.0	120	539	.73	74.2	390	190	.8	848	8.0	--
JAN. 01-31	1.1	1.1	120	548	.75	75.5	390	190	.8	856	8.2	--
FEB. 01-28	1.0	1.0	120	502	.68	67.8	350	160	.8	802	8.1	--
MAR. 01-31	.92	.94	150	587	.80	113	380	190	1.1	892	7.5	--
APR. 01-30	.54	.56	150	641	.87	177	420	240	1.0	975	7.8	--
MAY 01-31	.34	.36	100	402	.55	173	290	130	.6	628	7.9	--
JUNE 01-30	.47	.47	120	474	.64	87.0	320	150	.7	727	8.2	--
JULY 01-31	.36	.40	180	611	.83	56.4	390	190	1.0	916	8.0	--
AUG. 01-31	.45	.51	260	744	1.01	42.2	460	250	1.3	1120	8.2	--
SEP. 01-30	.81	.89	190	598	.81	71.0	400	190	1.0	912	8.2	--
WTD. AVG.	.67	.68	134	532	.72	--	363	176	.8	805	8.0	--
TIME WTD. AVG.	.71	.73	148	560	.76	--	370	184	.9	847	8.0	--
TOT. LOAD (TONS)	43	44	9	34300	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.96	.99	130	465	.63	80.4	330	120	.6	739	8.5	7.0
NOV. 28...	.69	.83	100	543	.74	84.3	380	180	.8	828	8.0	.0
FEB. 12...	1.2	1.2	120	557	.76	88.4	370	150	.9	875	8.0	.5
MAR. 20...	.53	.74	120	510	.69	114	440	170	.9	811	7.6	4.0
APR. 09...	.56	.64	170	751	1.02	115	510	300	1.1	1100	8.5	3.0
MAY 08...	.22	.52	60	360	.49	191	270	98	.4	574	7.7	12.5
JUNE 05...	.34	.46	130	478	.65	107	350	170	.6	767	8.0	17.5
JULY 19...	.31	.53	--	591	.80	23.9	400	190	.9	887	8.0	20.0
AUG. 27...	.57	.62	290	785	1.07	75.9	480	230	1.4	1170	8.4	25.5
SEP. 26...	.71	.83	--	521	.71	74.6	350	160	.8	810	7.8	13.0

06421500 RAPID CREEK NEAR FARMINGDALE, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	905	905	900	1000	820	780	1180	710	780	870	800	920
2	900	865	920	980	810	780	1140	650	790	900	850	870
3	880	920	920	920	810	750	1130	715	770	970	840	920
4	850	930	950	870	830	820	1120	625	800	970	870	930
5	820	915	950	890	840	830	1120	605	710	970	900	840
6	820	900	1000	930	800	870	1130	585	720	1000	930	880
7	810	900	990	970	820	880	1130	570	770	1070	980	770
8	810	910	970	950	850	870	1110	565	810	1080	920	810
9	855	910	980	920	840	910	1110	565	730	1160	930	850
10	845	910	1000	900	940	870	1070	535	710	850	990	900
11	830	905	980	910	880	900	1050	540	710	930	950	880
12	810	925	910	930	870	940	1070	540	670	1000	1040	860
13	825	890	850	910	800	950	1080	545	660	970	940	870
14	815	885	840	870	800	900	1080	530	680	940	1020	810
15	830	855	840	860	820	860	1060	530	690	940	1040	890
16	840	905	850	820	820	830	1040	535	680	930	1000	790
17	840	895	850	860	860	800	1020	540	660	1030	990	660
18	790	900	840	780	840	720	1010	535	660	950	1040	930
19	795	900	830	800	800	760	1020	550	660	920	1060	690
20	780	920	820	780	760	780	1040	580	660	900	1110	700
21	825	910	860	830	810	860	900	585	660	780	1140	710
22	835	890	1060	820	850	870	1090	645	680	690	1060	700
23	830	870	860	870	780	910	840	680	740	750	950	710
24	830	905	900	850	800	930	760	640	750	860	980	710
25	825	890	860	850	780	930	740	660	780	880	1050	730
26	805	855	850	810	820	1010	720	665	770	870	1100	730
27	785	845	850	820	780	870	710	730	760	770	1110	700
28	825	875	810	870	800	1030	680	705	800	810	1050	710
29	790	870	830	850	---	1180	700	745	860	830	960	750
30	835	870	870	840	---	1250	680	790	840	830	1030	720
31	905	---	870	810	---	1260	---	785	---	860	920	---
AVG	830	894	897	873	823	900	984	619	732	912	985	798

06421500 RAPID CREEK NEAR FARMINGDALE, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.5	0.0	---	0.0	0.0	0.0	5.0	6.0	16.5	23.0	20.0	21.0
2	---	0.0	---	0.0	0.0	0.0	6.0	6.5	19.0	20.5	20.0	16.0
3	---	2.0	---	0.0	0.0	0.0	5.0	8.0	15.0	21.0	25.0	14.0
4	---	3.5	---	0.0	0.0	0.0	3.5	10.0	14.0	24.0	22.0	13.0
5	---	5.0	---	0.0	0.0	0.0	5.5	12.0	15.5	21.0	22.0	14.0
6	---	---	---	0.0	0.0	0.0	6.5	12.0	16.5	21.5	21.0	16.0
7	---	---	---	0.0	0.0	0.0	6.0	11.5	18.5	21.5	20.0	17.0
8	10.0	---	---	0.0	0.0	0.0	1.5	12.0	19.0	22.0	20.0	17.5
9	10.0	---	---	---	0.0	0.0	1.0	11.5	20.5	21.0	20.0	---
10	12.0	2.5	---	0.0	0.0	0.0	1.0	10.5	20.5	24.0	19.5	---
11	10.0	2.5	0.0	0.0	0.0	0.0	3.5	11.0	20.5	24.0	21.0	19.0
12	12.0	1.0	0.0	0.0	0.0	0.0	6.0	10.0	19.0	24.0	22.0	16.0
13	13.0	0.5	0.0	0.0	0.0	0.0	7.5	10.0	21.0	21.0	19.0	14.5
14	9.5	1.0	0.0	0.0	0.0	---	12.0	10.0	22.5	19.0	20.0	14.5
15	---	---	0.0	0.0	0.0	---	6.5	10.5	19.0	20.0	22.0	8.5
16	8.0	---	0.0	0.0	0.0	---	5.5	12.5	17.5	21.0	---	7.0
17	8.0	---	0.0	0.0	0.0	0.0	8.5	15.0	16.5	22.0	22.0	8.0
18	5.0	---	0.0	0.0	0.0	0.0	11.0	15.0	15.0	20.0	21.5	10.0
19	4.0	---	0.0	0.0	0.0	---	8.0	16.0	11.5	20.0	22.0	13.0
20	6.0	---	0.0	0.0	0.0	0.0	7.0	17.0	13.0	18.0	23.0	12.0
21	7.5	---	0.0	0.0	0.0	0.5	8.0	17.0	14.5	16.5	24.0	14.0
22	7.0	---	0.0	0.0	0.0	1.5	6.5	12.0	17.0	16.5	22.0	12.0
23	6.5	---	0.0	0.0	0.0	1.5	10.0	14.0	---	18.5	20.0	13.5
24	---	---	0.0	0.0	0.0	2.0	10.0	13.5	21.0	18.5	---	15.0
25	5.5	---	0.0	0.0	0.0	1.5	8.5	12.0	20.0	21.5	---	12.0
26	6.0	---	0.0	0.0	0.0	1.5	6.5	12.0	22.0	20.0	23.0	12.0
27	6.0	---	0.0	0.0	0.0	2.5	6.5	8.0	20.0	22.5	22.0	10.5
28	6.5	---	0.0	0.0	0.0	2.5	13.0	8.5	19.5	21.5	21.5	11.0
29	6.0	---	0.0	0.0	---	2.0	10.0	8.0	21.0	24.0	21.0	---
30	6.0	---	0.0	0.0	---	3.0	9.0	9.5	21.0	21.0	20.0	10.5
31	0.5	---	0.0	0.0	---	5.0	---	14.0	---	19.5	21.0	---
AVG	---	---	---	0.0	B 0.0	---	7.0	11.5	C 18.0	21.0	D 21.5	E 13.5

B Based on 30 days of data.
C Based on 29 days of data.
D Based on 28 days of data.
E Based on 27 days of data.

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°44'59", long 104°02'49", in NE¼NW¼NW¼ sec.18, T.9 N., R.1 E., Butte County, South Dakota, at county bridge, 4.0 mi (6.4 km) northwest of Belle Fourche, S. Dak., and 8.0 mi (12.9 km) downstream from gaging station.

DRAINAGE AREA.--3,280 mi^2 (8,500 km^2), approximately (at gaging station).

PERIOD OF RECORD.--Chemical analyses: October 1965 to September 1973.
Water temperatures: October 1965 to September 1973.

EXTREMES.--1972-73:
Specific conductance: Maximum daily observed, 2,410 micromhos Dec. 15; minimum daily, 696 micromhos May 29.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)
NOV.									
02...	1600	37	11	20	260	85	110	8.1	220
16...	0840	37	9.0	50	260	85	100	7.7	207
DEC.									
14...	0950	18	13	60	360	120	120	9.5	323
JAN.									
18...	0900	50	9.5	50	160	45	78	7.2	115
FEB.									
14...	1050	32	8.8	100	300	76	95	7.7	246
MAR.									
13...	1520	86	5.7	50	210	62	67	7.9	205
APR.									
26...	1500	--	9.2	130	120	41	42	7.0	136
MAY									
10...	0855	249	11	120	130	36	37	5.8	195
JUNE									
06...	0920	427	10	50	100	34	39	6.5	159
JULY									
25...	1420	--	8.4	30	130	41	79	7.4	182
AUG.									
22...	0905	85	7.1	50	140	42	86	8.4	159
SEP.									
18...	1635	--	8.3	100	200	68	89	7.7	179

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE.--Continued

EXTREMES.--1972-73:--Continued
Water temperatures: Maximum, 27.5°C July 8, 17; minimum, freezing point on many days during November to February.

Period of record:
Specific conductance: Maximum daily, 2,840 micromhos Jan. 17, 1970; minimum daily, 461 micromhos Apr. 12, 1971.
Water temperatures: Maximum, 30.0°C Aug. 13, 1972; minimum, freezing point on many days during winter period.

REMARKS.--Thermograph record, furnished by Wyoming Game and Fish Commission, at site 12.4 mi (20.0 km) upstream for the period May to September 1973; maximum, 28.5°C July 10.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)
NOV.									
02...	0	1000	6.7	.7	.05	180	1660	2.26	166
16...	0	1000	6.7	.7	.02	180	1650	2.24	165
DEC.									
14...	0	1300	8.7	.8	.11	200	2140	2.91	184
JAN.									
18...	0	640	5.0	.7	.25	140	1050	1.43	142
FEB.									
14...	0	1000	7.7	.7	.07	170	1720	2.34	149
MAR.									
13...	0	730	9.3	.6	.05	140	1230	1.67	206
APR.									
26...	0	410	6.3	.6	.25	110	706	.96	--
MAY									
10...	0	390	6.0	.5	.11	110	738	1.00	496
JUNE									
06...	0	340	3.9	.6	.18	120	642	.87	740
JULY									
25...	0	500	7.0	.6	.16	130	880	1.20	--
AUG.									
22...	0	560	7.7	.7	.34	140	934	1.27	214
SEP.									
18...	0	800	6.7	.6	.09	130	1300	1.77	--

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTMEBER 1973

DATE	HARDNESS (CA,MG) (MG/L) (00900)	NON-CARBONATE HARDNESS (MG/L) (00902)	ALKALINITY AS CACO3 (MG/L) (00410)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	BIOCHEMICAL OXYGEN DEMAND (MG/L) (00310)
NOV.								
02...	1000	820	180	1.5	1950	8.2	1.0	2.8
16...	1000	830	170	1.4	1940	8.0	.5	--
DEC.								
14...	1400	1100	205	1.8	2360	7.8	.0	--
JAN.								
18...	580	490	94	1.8	1330	7.6	.5	3.4
FEB.								
14...	1100	900	202	1.3	1970	7.8	.0	--
MAR.								
13...	790	620	168	1.0	1510	8.1	3.5	--
APR.								
26...	460	350	112	.8	963	7.9	9.5	1.1
MAY								
10...	480	320	160	.7	971	8.0	11.0	--
JUNE								
06...	400	270	130	.9	898	7.9	16.5	--
JULY								
25...	500	350	149	1.5	1160	8.0	22.5	2.2
AUG.								
22...	510	380	130	1.6	1240	7.9	22.0	--
SEP.								
18...	780	630	147	1.4	1590	8.3	16.0	--

FIELD DETERMINATIONS

DATE	TIME	TEMPERATURE (DEG C) (00010)	PH (UNITS) (00400)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	DISSOLVED OXYGEN (MG/L) (00300)	IMMEDIATE COLIFORM (COL. PER 100 ML) (31501)	FECAL COLIFORM (COL. PER 100 ML) (31616)
NOV.							
02...	1600	1.0	7.9	2180	12.7	360	2
JAN.							
18...	0900	.5	7.9	1840	12.4	1000	180
APR.							
26...	1500	9.5	7.8	1100	9.9	710	560
JULY							
25...	1420	22.5	8.2	1480	7.5	580	260

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1020	1890	2080	1980	1890	1420	1610	893	953	1410	1390	1530
2	950	1940	2050	2030	1800	1400	1640	1030	1090	1540	1280	1520
3	1050	1850	2020	2040	1820	1360	1650	1050	1030	1370	1300	1560
4	966	1720	2040	2060	1820	1350	1720	1010	1120	1390	1290	1560
5	881	1780	2080	2090	1840	1370	1730	1120	877	1470	1280	1570
6	980	1810	2150	2000	1830	1330	1730	1100	1040	1480	1310	1580
7	905	1840	2280	2140	1850	1250	1740	1020	958	1510	1320	1580
8	906	1880	2300	2160	1870	1220	1750	942	1040	1510	1330	1580
9	1150	1830	2260	2170	1910	1500	1720	1010	1080	1520	1330	1590
10	1290	1870	2290	2160	1950	1490	1710	1000	1160	1450	1230	1570
11	1330	1810	2290	2150	1970	1430	1670	980	1270	1400	1240	1590
12	1380	1810	2330	2160	1980	1490	1670	1010	1250	1360	1220	1670
13	1400	1840	2350	2170	1990	1480	1730	1050	1270	1700	1200	1620
14	1400	1900	2380	2020	1990	1460	1740	1090	1290	1500	1220	1580
15	1530	1830	2410	1850	1970	1440	1750	1130	1320	1520	1120	1610
16	1570	1880	2400	1730	1980	1580	1710	1160	1380	1520	1110	1660
17	1610	---	---	1300	1670	1670	1590	1200	1360	1530	1140	1570
18	1680	---	---	1220	1890	1620	1520	1210	1420	1340	1140	1590
19	1600	---	---	1370	1890	1720	1790	1230	1360	1300	1190	1620
20	1710	---	---	1430	1830	1820	1490	1250	1290	1280	1210	1660
21	1740	---	---	1580	1800	1760	980	1250	1310	1250	1230	1580
22	1760	---	---	1680	1750	1710	1040	1260	1060	1210	1200	1570
23	1760	---	---	1640	1660	1710	1210	1290	1190	1170	1220	1600
24	1780	---	---	1620	1610	1690	1320	1310	1150	1150	1250	1650
25	1800	---	---	1700	1260	1590	1120	1390	1200	977	1250	1660
26	1820	1800	---	1810	1800	1690	1060	1410	1200	1020	1250	1230
27	1830	1810	---	1820	1590	1710	835	1440	1280	1050	1240	1670
28	1820	2020	---	1840	1460	1750	892	1200	1330	1040	1430	1680
29	1790	2020	---	1850	---	1700	997	696	1350	1100	1400	1690
30	1780	2050	1950	1860	---	1550	1020	902	1340	1120	1310	1670
31	1830	---	1950	1880	---	1560	---	986	---	1210	1480	---
AVG	1470	---	---	1850	1800	1560	1470	1120	1200	1340	1260	1590

06428500 BELLE FOURCHE RIVER AT WYOMING-SOUTH DAKOTA STATE LINE.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.5	2.0	0.0	0.0	0.0	2.0	9.0	10.5	20.0	25.0	25.5	26.0
2	14.5	1.5	0.0	0.0	0.0	0.5	9.0	11.5	15.5	25.5	26.0	15.0
3	10.0	5.0	0.0	0.0	0.0	1.0	8.0	14.0	15.5	27.0	25.5	14.0
4	13.0	4.0	0.0	0.0	0.0	2.0	10.0	15.0	17.0	27.0	26.0	19.0
5	9.0	6.0	0.0	0.0	0.0	0.5	12.0	16.0	17.0	27.0	26.0	20.0
6	10.0	6.5	0.0	0.0	0.0	2.0	7.0	17.0	19.0	27.0	26.5	21.0
7	12.0	4.5	0.0	0.0	0.0	3.5	5.0	18.0	20.0	25.5	24.0	24.0
8	14.0	4.5	0.0	0.0	0.0	1.0	5.0	16.0	21.0	27.5	23.0	22.0
9	14.5	4.5	0.0	0.0	0.0	5.0	6.0	13.5	24.0	27.0	25.0	24.0
10	14.0	3.0	0.0	0.0	0.0	3.0	7.0	13.5	22.0	26.0	23.0	25.0
11	10.0	1.0	0.0	0.0	0.0	6.0	7.0	14.0	20.5	26.5	25.0	21.0
12	13.0	1.0	0.0	0.0	0.0	8.0	13.0	14.0	21.0	25.0	25.0	21.0
13	13.0	1.0	0.0	0.0	0.0	4.0	15.0	15.0	21.0	23.5	25.0	20.0
14	12.0	1.0	0.0	0.0	0.0	2.0	13.0	16.5	21.5	24.5	25.5	11.0
15	11.0	1.0	0.0	0.0	0.0	1.0	12.0	18.0	21.0	26.5	25.0	11.0
16	12.0	0.5	0.0	0.0	0.0	4.0	13.0	19.0	20.5	26.0	26.5	14.0
17	9.5	0.5	0.0	0.0	0.0	6.5	12.0	20.0	21.0	27.5	25.5	15.0
18	8.0	0.0	0.0	0.0	0.0	5.0	9.0	21.0	15.0	25.5	25.0	16.0
19	8.0	0.0	0.0	0.0	0.0	6.5	7.0	21.0	14.0	24.0	26.0	17.0
20	9.0	0.0	0.0	0.0	0.0	9.0	5.0	22.0	15.0	18.0	27.0	18.0
21	9.0	0.0	0.0	0.0	0.0	10.0	6.0	20.5	19.0	18.0	25.5	17.0
22	8.0	0.0	0.0	0.0	0.0	6.5	8.0	19.5	22.0	20.0	24.0	21.0
23	6.5	0.0	0.0	0.0	0.0	5.0	11.0	14.5	24.0	20.5	24.0	18.0
24	9.0	0.0	0.0	0.0	0.0	4.0	11.0	18.0	23.0	22.0	23.0	18.0
25	8.0	0.0	0.0	0.0	0.5	7.0	9.0	17.0	25.5	22.0	25.0	16.0
26	7.0	0.0	0.0	0.0	0.5	9.0	9.5	14.0	24.0	23.0	26.0	16.0
27	6.5	0.0	0.0	0.0	0.5	9.0	11.0	10.0	23.0	26.0	25.0	17.0
28	4.5	0.0	0.0	0.0	1.0	9.0	14.0	11.0	25.0	26.0	26.0	17.0
29	2.0	0.0	0.0	0.0	---	9.5	14.0	13.0	25.0	25.5	26.0	18.0
30	0.5	0.0	0.0	0.0	---	7.0	11.0	15.5	25.0	25.0	27.0	17.0
31	0.5	---	0.0	0.0	---	10.0	---	20.0	---	25.5	27.0	---
AVG	9.5	1.5	0.0	0.0	0.0	5.0	9.5	16.0	20.5	24.5	25.5	18.5

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973
(RECORDER WITH TEMPERATURE ATTACHMENT, CONTINUOUS ETHYL ALCOHOL-ACTUATED THERMOGRAPH)

	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	---	---	---	---	20.5	16.5	24.5	22.0	25.0	20.5	21.0	18.5
2	---	---	---	---	19.5	15.0	24.0	19.0	25.0	20.5	18.5	15.5
3	---	---	---	---	15.5	14.0	25.5	20.5	25.5	21.0	15.5	14.5
4	---	---	---	---	15.5	13.0	26.0	21.0	24.5	21.5	17.0	14.0
5	---	---	---	---	18.0	14.0	27.0	21.5	26.0	21.5	19.0	15.0
6	---	---	---	---	20.0	15.5	26.5	22.0	24.5	21.5	20.0	16.5
7	---	---	---	---	21.0	18.0	26.0	21.5	24.5	20.0	20.5	18.0
8	---	---	---	---	22.0	18.5	27.0	20.5	23.0	20.0	20.5	18.5
9	---	---	---	---	24.0	20.0	28.0	21.5	23.5	19.0	21.5	19.0
10	---	---	---	---	23.0	20.0	28.5	23.0	24.0	19.5	21.0	19.0
11	---	---	---	---	21.0	18.5	27.0	23.0	24.5	20.0	20.5	18.0
12	---	---	---	---	21.5	17.0	25.5	22.0	23.5	21.0	19.0	15.5
13	---	---	---	---	23.5	19.0	23.0	20.0	24.0	19.5	19.0	16.5
14	---	---	---	---	22.0	20.0	23.5	19.0	24.5	21.0	18.0	13.0
15	---	---	---	---	21.0	19.0	24.5	19.5	25.0	20.5	13.0	11.0
16	---	---	---	---	20.5	18.0	25.0	20.5	25.0	20.5	11.0	10.5
17	---	---	---	---	19.0	16.5	26.0	21.0	25.0	21.0	14.0	10.0
18	---	---	---	---	16.5	10.5	23.5	20.5	25.0	21.5	14.5	11.5
19	---	---	---	---	12.0	10.0	22.0	18.5	24.5	20.5	15.0	13.5
20	---	---	---	---	16.5	11.5	18.5	16.5	25.5	20.5	15.0	13.5
21	---	---	---	---	19.5	14.5	18.0	16.0	25.5	22.0	16.0	14.5
22	---	---	---	---	22.0	17.0	19.0	16.5	24.0	22.0	15.5	13.5
23	---	---	---	---	23.5	19.5	20.5	18.5	22.0	20.5	15.5	13.5
24	---	---	---	---	23.5	21.0	21.5	18.0	21.5	20.0	16.0	14.5
25	---	---	---	---	24.5	20.5	23.0	19.0	23.0	19.0	15.5	13.5
26	---	---	---	---	24.0	21.5	23.0	20.0	24.0	20.0	15.0	13.5
27	---	---	---	---	23.0	19.5	24.0	20.0	23.5	20.5	15.0	12.0
28	---	---	---	---	25.0	20.0	24.5	20.5	23.0	19.5	14.5	13.0
29	---	---	---	---	25.0	20.5	24.5	21.0	23.0	19.0	15.5	13.0
30	---	---	16.5	---	25.0	20.0	24.0	20.5	22.0	19.5	15.5	13.0
31	---	---	19.5	14.0	---	---	24.5	20.0	22.0	19.0	---	---
AVG	---	---	---	---	25.0	10.0	28.5	16.0	26.0	19.0	21.5	10.0

06430500 REDWATER CREEK AT WYOMING-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 44°34'26", long 104°02'54", in NW¼NW¼ sec.18, T.7 N., R.1 E., Butte County, S. Dak., at gaging station, 800 ft (244 m) downstream from State line, 5.7 mi (9.2 km) upstream from Crow Creek, and 12 mi (19 km) southwest of Belle Fourche, S. Dak.

DRAINAGE AREA.--471 mi² (1,219 km²).

PERIOD OF RECORD.--Chemical analyses: May 1969 to June 1970.
Sediment records: October 1971 to September 1973.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS AND PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	DIS-CHARGE (CFS) (00060)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. SIEVE DIAM. % FINER THAN .062 MM (70331)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)	SUS. SED. FALL DIAM. % FINER THAN .500 MM (70345)
NOV.											
02...	1510	8.0	45	95	12	--	--	--	--	--	--
16...	1028	6.0	45	48	5.8	--	--	--	--	--	--
DEC.											
18...	1230	.0	44	84	10	--	--	--	--	--	--
JAN.											
17...	1645	5.5	47	60	7.6	--	--	--	--	--	--
FEB.											
14...	0820	2.0	45	134	16	--	--	--	--	--	--
MAR.											
13...	1420	6.5	42	85	9.6	--	--	--	--	--	--
APR.											
26...	1300	--	71	1220	234	19	38	69	98	100	--
MAY											
09...	1500	8.0	48	702	91	--	--	--	--	--	--
JUNE											
06...	1230	14.0	107	432	125	--	--	--	--	--	--
JULY											
25...	1200	18.0	33	50	4.5	--	--	--	--	--	--
AUG.											
22...	1145	17.0	319	4990	4300	44	72	94	98	100	--
SEP.											
19...	0830	11.5	52	72	10	--	--	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	DIS-CHARGE (CFS) (00060)	BED MAT. FALL DIAM. % FINER THAN .004 MM (80157)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
SEP.							
19...	0830	11.5	52	3	26	38	49

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
SEP.							
19...	58	64	67	70	75	84	93

06434500 INLET CANAL NEAR BELLE FOURCHE, S. DAK.

LOCATION.--Lat 44°42'14", long 103°49'23", in NE¼NW¼ sec.36, T.9 N., R.2 E., Butte County, at gaging station, on right bank 0.5 mi (0.8 km) downstream from Crow Creek, 0.9 mi (1.4 km) downstream from diversion dam on Belle Fourche River, and 2.5 mi (4.0 km) northeast of Belle Fourche.

PERIOD OF RECORD.--Chemical analyses: October 1968 to September 1973.
Water temperatures: October 1968 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 1,070 mg/l Dec. 1-31; minimum, 709 mg/l May 17-31.
Hardness: Maximum, 750 mg/l Dec. 1-31; minimum, 480 mg/l May 17-31.
Specific conductance: Maximum daily, 1,550 micromhos July 14, 17, 18; minimum daily, 680 micromhos May 30.
Water temperatures: Maximum, 23.0°C July 11, 12; minimum, freezing point on many days during December to January.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	281	9.1	170	46	27	3.9	235	480	5.1	.6	.25
NOV. 01-30	--	236	10	190	50	22	3.5	248	520	5.3	.4	.34
DEC. 01-31	--	211	12	210	55	37	4.2	260	610	9.2	.4	.85
JAN. 01-31	--	213	12	190	52	27	3.8	213	560	1.6	.6	.46
MAY 17-31	--	419	11	130	37	35	4.4	193	390	4.2	.5	.44
JUNE 01-30	--	238	17	150	43	33	5.0	230	440	9.5	.2	.30
JULY 01-31	--	157	16	180	52	45	5.7	209	590	5.1	.5	.18
AUG. 01-31	--	172	10	170	48	49	6.4	207	550	6.6	.5	.28
SEP. 01-30	--	212	11	190	48	25	4.1	207	510	4.2	.4	.53
WTD. AVG.	--	--	12	175	48	32	4.5	224	512	5.7	.5	.38
TIME WTD. AVG.	--	A 227	12	178	49	33	4.6	224	525	5.7	.5	.38
TOT. LOAD (TONS)	--	--	1890	27900	7590	5150	709	35600	81500	901	72	61

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 03...	1200	B 384	7.5	130	35	46	4.7	213	370	5.1	.5	.20
DEC. 04...	1620	B 122	11	210	57	22	3.3	284	570	4.8	.3	.30
FEB. 01...	1425	B 201	10	210	53	28	3.6	286	580	3.5	.4	.34
JUNE 06...	0800	B 164	11	110	31	27	4.7	188	290	2.4	.3	.16
JULY 02...	1130	B 245	11	180	48	45	6.1	202	570	3.6	.5	.05
AUG. 02...	1000	B 165	8.7	180	48	51	5.5	217	570	5.0	.5	.13
SEP. 06...	1545	B 229	11	190	49	29	4.1	240	550	7.0	.3	.33

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Mean discharge based on 260 days of chemical analysis; mean discharge for 365 days, 163 cfs.
B Discharge at time of sampling.

06434500 INLET CANAL NEAR BELLE FOURCHE, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1968-69, 1970-73): Maximum, 1,180 mg/l Feb. 1-29, 1972; minimum, 536 mg/l Feb. 1-28, 1971.
Hardness (1968-69, 1971-73): Maximum, 900 mg/l Feb. 1-29, 1972; minimum, 360 mg/l Feb. 1-28, 1971, Mar. 1-9, 21-23, June 7-30, 1972.
Specific conductance: Maximum daily, 3,100 micromhos Feb. 13, 1969; minimum daily, 335 micromhos Feb. 12, 1971.
Water temperatures: Maximum, 29.0°C July 1, 1971; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Additional samples collected for more comprehensive definition of water quality. Maximum observed during water year: Hardness, 760 mg/l Dec. 4. Minimum observed during water year: Dissolved solids, 570 mg/l June 6; hardness, 400 mg/l June 6. No flow Feb. 3-20, Feb. 23 to May 16.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.03	.03	90	858	1.17	651	610	420	.5	1140	8.0	--
NOV. 01-30	.03	.03	90	925	1.26	589	680	480	.4	1210	8.0	--
DEC. 01-31	.16	.16	120	1070	1.46	610	750	540	.6	1410	8.2	--
JAN. 01-31	.03	.04	100	954	1.30	549	690	510	.4	1290	7.6	--
MAY 17-31	.03	.05	100	709	.96	802	480	320	.7	998	7.7	--
JUNE 01-30	.06	.10	140	813	1.11	522	550	360	.6	1100	7.9	--
JULY 01-31	.05	.07	160	998	1.36	423	660	490	.8	1320	8.0	--
AUG. 01-31	.06	.09	130	944	1.28	438	620	450	.9	1310	8.2	--
SEP. 01-30	.03	.14	80	896	1.22	513	670	500	.4	1240	7.8	--
WTD. AVG.	.05	.08	110	902	1.23	--	633	450	.6	1220	7.9	--
TIME WTD. AVG.	.06	.08	113	920	1.25	--	644	460	.6	1240	7.9	--
TOT. LOAD (TONS)	8.6	12	17	144000	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 03...	.06	.57	140	706	.96	732	470	290	.9	1023	7.8	10.0
DEC. 04...	.03	.07	100	1020	1.39	336	760	530	.3	1330	7.4	.0
FEB. 01...	.02	.03	100	1030	1.40	559	740	510	.4	1320	8.2	.0
JUNE 06...	.04	.51	110	570	.78	252	400	250	.6	845	7.9	15.5
JULY 02...	.04	.37	150	964	1.31	638	650	480	.8	1210	8.1	18.5
AUG. 02...	.08	.13	150	976	1.33	435	650	470	.9	1260	8.1	19.5
SEP. 06...	.01	.02	110	960	1.31	594	680	480	.5	1240	8.2	19.0

06434500 INLET CANAL NEAR BELLE FOURCHE, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1100	1190	1320	1320	1280	---	---	---	810	1260	1110	1250
2	1080	1260	1290	1260	1350	---	---	---	950	1300	1260	1170
3	1070	1360	1270	1210	---	---	---	---	970	1370	1220	1210
4	1050	1360	1340	1220	---	---	---	---	940	1370	1220	1210
5	1030	1350	1430	1380	---	---	---	---	870	1360	1230	1220
6	1030	1350	1430	1380	---	---	---	---	870	1310	1220	1220
7	1120	1320	1420	1390	---	---	---	---	950	1360	1240	1240
8	1120	1010	1420	1400	---	---	---	---	1000	1400	1260	1240
9	1130	1300	1410	1330	---	---	---	---	1030	1400	1280	1210
10	1160	1300	1500	1390	---	---	---	---	1090	1440	1250	1190
11	1190	1310	1430	1510	---	---	---	---	1090	1440	1260	1210
12	1210	1320	1440	1510	---	---	---	---	1130	1500	1250	1190
13	1210	1250	1390	1330	---	---	---	---	1150	1510	1210	1200
14	1220	1220	1450	1330	---	---	---	---	1160	1550	1230	1220
15	1230	1250	1450	1280	---	---	---	---	1170	1520	1230	1200
16	1220	1340	1450	1240	---	---	---	---	1180	1520	1220	1200
17	1230	1380	1450	1260	---	---	---	870	1260	1550	1230	1200
18	1250	1300	1440	1240	---	---	---	860	1230	1550	1230	1190
19	1230	1290	1430	1240	---	---	---	850	1230	1410	1220	1180
20	1240	1290	1440	1260	---	---	---	830	1340	1340	1220	1190
21	1280	1280	1460	1260	1350	---	---	920	1290	1340	1220	1190
22	1280	1290	1450	1220	1350	---	---	940	1110	1320	1330	1190
23	1270	1290	1450	1230	---	---	---	1030	1090	1260	1460	1180
24	1270	1240	1440	1230	---	---	---	1090	1120	1260	1330	1200
25	1250	1320	1430	1290	---	---	---	1130	1130	1260	1310	1180
26	1260	1350	1430	1280	---	---	---	1150	1130	1270	1210	1110
27	1280	1220	1420	1240	---	---	---	1100	1140	1260	1250	1110
28	1260	1200	1330	1310	---	---	---	1130	1200	1260	1250	1190
29	1200	1210	1320	1280	---	---	---	950	1230	1250	1230	1190
30	1200	1330	1410	1250	---	---	---	680	1240	1260	1220	1190
31	1180	---	1380	1280	---	---	---	810	---	1260	1220	---
AVG	1190	1280	1410	1300	---	---	---	---	1100	1370	1250	1200

06434500 INLET CANAL NEAR BELLE FOURCHE, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	---	6.0	0.0	---	---	---	---	14.0	22.0	20.0	17.0
2	12.0	4.0	2.0	0.0	---	---	---	---	14.0	20.0	19.0	17.0
3	9.0	6.0	1.0	0.0	---	---	---	---	13.0	21.0	19.0	18.0
4	11.0	8.0	1.0	0.0	---	---	---	---	15.0	20.0	20.0	12.0
5	10.0	7.0	0.0	0.0	---	---	---	---	15.0	21.0	19.0	13.0
6	7.0	8.0	---	0.0	---	---	---	---	16.0	22.0	19.0	15.0
7	9.0	5.0	---	0.0	---	---	---	---	15.0	21.0	20.0	16.0
8	10.0	5.0	0.0	0.0	---	---	---	---	16.0	22.0	19.0	18.0
9	10.0	6.0	0.0	0.0	---	---	---	---	18.0	22.0	19.0	16.0
10	11.0	5.0	0.0	0.0	---	---	---	---	17.0	21.0	19.0	16.0
11	9.0	5.0	0.0	0.0	---	---	---	---	17.0	23.0	20.0	15.0
12	8.0	2.0	0.0	0.0	---	---	---	---	16.0	23.0	20.0	16.0
13	10.0	4.0	0.0	0.0	---	---	---	---	17.0	19.0	19.0	15.0
14	8.0	4.0	0.0	1.0	---	---	---	---	17.0	16.0	19.0	15.0
15	7.0	4.0	0.0	1.0	---	---	---	---	18.0	18.0	20.0	15.0
16	8.0	6.0	0.0	1.0	---	---	---	---	18.0	20.0	20.0	14.0
17	7.0	6.0	0.0	0.0	---	---	---	---	17.0	21.0	19.0	11.0
18	6.0	8.0	0.0	0.0	---	---	---	---	15.0	20.0	22.0	10.0
19	5.0	7.0	0.0	0.0	---	---	---	15.0	11.0	19.0	20.0	12.0
20	7.0	7.0	0.0	1.0	---	---	---	16.0	11.0	19.0	20.0	13.0
21	7.0	6.0	0.0	0.0	---	---	---	11.0	13.0	18.0	20.0	12.0
22	8.0	4.0	0.0	0.0	---	---	---	10.0	15.0	18.0	19.0	14.0
23	7.0	5.0	0.0	0.0	---	---	---	14.0	18.0	18.0	18.0	13.0
24	7.0	4.0	---	0.0	---	---	---	12.0	19.0	18.0	19.0	11.0
25	8.0	3.0	---	0.0	---	---	---	11.0	19.0	17.0	17.0	13.0
26	9.0	2.0	0.0	0.0	---	---	---	11.0	18.0	18.0	18.0	13.0
27	8.0	3.0	0.0	0.0	---	---	---	12.0	19.0	19.0	18.0	12.0
28	6.0	2.0	0.0	0.0	---	---	---	14.0	19.0	18.0	18.0	11.0
29	5.0	1.0	0.0	0.0	---	---	---	13.0	20.0	18.0	19.0	10.0
30	6.0	2.0	0.0	0.0	---	---	---	15.0	20.0	19.0	18.0	11.0
31	6.0	---	0.0	0.0	---	---	---	13.0	---	19.0	18.0	---
AVG	8.0	C 5.0	D 0.5	0.0	---	---	---	---	16.5	19.5	19.0	14.0

C Based on 29 days of data.
D Based on 26 days of data.

06436800 HORSE CREEK NEAR VALE, S. DAK.

LOCATION.--Lat 44°39'30", long 103°20'17", in SE¼NW¼ sec.13, T.8 N., R.6 E., Butte County, at gaging station, on right bank 600 ft (183 m) downstream from Dry Creek, 2.9 mi (4.7 km) upstream from mouth, and 4.0 mi (6.4 km) northeast of Vale.

DRAINAGE AREA.--530 mi² (1,370 km²), approximately.

PERIOD OF RECORD.--August 1964 to September 1968 (monthly), October 1968 to September 1973 (daily).
Water temperatures: October 1968 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 5,640 mg/l Dec. 1-31; minimum, 1,490 mg/l Aug. 1-31.
Hardness: Maximum, 2,500 mg/l Dec. 1-31; minimum, 870 mg/l Aug. 1-31.
Specific conductance: Maximum daily, 6,950 micromhos Nov. 26; minimum daily, 1,160 micromhos Aug. 22.
Water temperatures: Maximum, 30.0°C July 10, 11; minimum, freezing point on many days during November to March.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	16	2.9	270	200	360	11	288	1900	58	.6	4.9
NOV. 01-30	--	7.8	3.9	350	360	750	11	405	3300	160	.7	15
DEC. 01-31	--	3.4	5.9	400	370	790	14	519	3600	150	.7	13
JAN. 01-31	--	5.0	8.1	310	250	530	12	370	2500	99	.7	6.1
MAR. 01-31	--	41	5.8	170	160	400	8.0	224	1700	69	.6	7.3
APR. 01-30	--	19	2.5	260	250	550	9.3	314	2400	100	.8	6.7
MAY 01-31	--	34	1.2	260	240	540	12	253	2400	10	.6	4.2
JUNE 01-30	--	49	9.0	200	110	200	8.6	198	1200	30	.6	1.9
JULY 01-31	--	122	14	210	91	140	14	199	1000	20	.6	.88
AUG. 01-31	--	92	7.9	200	90	150	10	176	940	18	.6	.71
SEP. 01-30	--	41	4.6	210	120	210	9.6	179	1200	31	.5	2.6
WTD. AVG.	--	--	8.2	216	134	254	11	215	1380	35	.6	2.8
TIME WTD. AVG.	--	A 39	6.0	258	204	418	11	284	2010	68	.6	5.7
TOT. LOAD (TONS)	--	--	293	7730	4780	9080	393	7680	49500	1250	22	100

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 04...	1155	B 44	2.4	220	110	170	8.3	205	1100	25	.6	2.0
DEC. 06...	1530	B 2.7	4.8	430	390	830	9.7	547	3700	140	.7	11
FEB. 05...	1325	B 6.8	6.9	230	250	610	13	330	2500	110	.5	22
MAR. 05...	1600	B 53	5.3	120	120	320	8.1	173	1200	53	.4	8.3
APR. 05...	1200	B 8.6	2.8	250	220	570	10	325	2300	120	.2	8.2
MAY 03...	1100	B 8.2	1.3	270	270	630	10	287	2800	110	.5	4.9
JUNE 06...	1400	B 47	5.6	170	84	190	6.9	173	930	27	.4	1.0
JULY 02...	1430	B 64	7.8	210	100	150	11	212	1100	21	.6	.06
AUG. 03...	1000	B 87	6.5	220	95	140	8.0	206	1000	22	.6	2.3
SEP. 07...	1500	B 43	5.3	210	100	170	9.0	202	1100	29	.5	1.8

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Mean discharge based on 337 days of chemical analysis; mean discharge for 365 days, 37 cfs.
B Discharge at time of sampling.

06436800 HORSE CREEK NEAR VALE, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1968-69, 1970-73): Maximum, 8,350 mg/l Jan. 1 to Feb. 28, 1969; minimum, 290 mg/l Feb. 1-28, 1971.
Hardness (1968-69, 1970-73): Maximum, 3,360 mg/l Jan. 1 to Feb. 28, 1969; minimum, 190 mg/l Feb. 1-28, 1971.
Specific conductance (1968-69, 1971-73): Maximum daily, 8,080 micromhos Feb. 1-3, 1969; minimum daily, 626 micromhos Oct. 5, 1972.
Water temperatures (1968-69, 1971-73): Maximum, 30.0°C July 10, 11, 1973; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during year: Dissolved solids, 5,820 mg/l Dec. 6; hardness, 2,700 mg/l Dec. 6. Minimum observed during water year: Hardness, 770 mg/l June 6. Additional samples collected for more comprehensive definition of water quality. Miscellaneous samples for sediment data published for water year 1968.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.03	.03	580	2970	4.04	128	1500	1300	4.0	3500	8.1	--
NOV. 01-30	.02	.02	990	5200	7.07	110	2400	2000	6.7	5720	8.1	--
DEC. 01-31	.09	.09	1100	5640	7.67	51.0	2500	2100	6.8	6050	7.9	--
JAN. 01-31	.06	.08	800	3920	5.33	52.9	1800	1500	5.4	4300	8.0	--
MAR. 01-31	.07	.10	380	2660	3.62	294	1100	900	5.3	3100	8.1	--
APR. 01-30	.10	.12	620	3760	5.11	193	1700	1400	5.8	4300	8.0	--
MAY 01-31	.01	.03	690	3610	4.91	331	1600	1400	5.8	4030	7.6	--
JUNE 01-30	.05	.08	340	1860	2.53	246	950	790	2.8	2190	7.8	--
JULY 01-31	.04	.11	320	1590	2.16	524	900	740	2.0	1940	7.6	--
AUG. 01-31	.05	.07	300	1490	2.03	370	870	730	1.9	1940	7.7	--
SEP. 01-30	.15	.16	380	1890	2.57	209	1000	870	2.9	2420	7.8	--
WTD. AVG.	.06	.09	405	2160	2.94	--	1090	915	3.2	2580	7.8	--
TIME WTD. AVG.	.06	.08	591	3140	4.28	--	1480	1250	4.5	3590	7.9	--
TOT. LOAD (TONS)	2.2	3.1	14	77100	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 04...	.04	.72	370	1750	2.38	209	1000	830	2.3	2260	8.2	10.5
DEC. 06...	.04	.05	1200	5820	7.92	42.9	2700	2200	7.0	6320	7.5	.0
FEB. 05...	.04	.07	630	3980	5.41	73.0	1600	1300	6.6	4600	7.9	.0
MAR. 05...	.05	.30	280	1950	2.65	281	790	650	4.9	2520	7.7	.0
APR. 05...	.03	.21	620	3670	4.99	85.4	1500	1300	6.3	4080	8.3	12.0
MAY 03...	.02	.11	690	4260	5.79	95.1	1800	1600	6.5	4870	8.2	12.0
JUNE 06...	.02	.26	300	1500	2.04	190	770	630	3.0	2010	7.8	21.0
JULY 02...	.03	.14	370	1710	2.33	297	940	760	2.1	2080	8.1	24.0
AUG. 03...	.01	.18	310	1600	2.18	376	940	770	2.0	2000	8.1	20.5
SEP. 07...	.00	.00	360	1730	2.35	204	940	770	2.4	2160	8.3	20.0

06436800 HORSE CREEK NEAR VALE, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2330	5200	6150	5300	3600	2800	3500	4250	2850	2000	1910	2100
2	2330	5070	6050	5350	3800	2700	3600	4350	2720	2100	1900	2110
3	2290	4970	6150	5250	4000	2600	3800	4350	2650	2050	1910	2210
4	2770	5200	6350	5300	4300	2550	3850	4300	2450	2100	2010	2200
5	2770	5320	6350	5200	4600	2520	4000	4450	1850	2320	2000	2250
6	2770	3670	6300	5300	4600	2300	4100	4500	2100	1950	1910	2170
7	2700	5290	6350	5200	4600	2160	4180	4650	2100	2040	1900	2250
8	4280	5290	6300	5300	4600	2160	4300	4650	2140	1980	1900	2300
9	3270	5150	6370	5300	4600	3110	4300	4650	2140	2000	2010	2360
10	3270	5200	6370	5290	4600	2910	4410	4600	2120	1960	1990	2300
11	3650	5630	6370	5110	4600	2700	4450	4700	2100	1980	2040	2440
12	3620	5400	6350	5500	4600	2800	4650	4700	2060	1980	1900	1850
13	3820	5480	6350	5100	4600	2850	4600	4700	2440	1950	1950	1890
14	3820	5470	6750	5500	4600	2800	4700	4900	2400	1950	2000	1930
15	3690	4530	6350	5480	4600	2400	4900	4850	2480	1900	1900	2250
16	3840	4180	6300	5450	4600	2800	4850	5000	2460	1900	1900	2230
17	4070	4460	6600	2400	4600	2800	4900	5000	2180	1860	1940	2190
18	4450	5520	6600	2200	4600	3900	5000	5050	1960	1920	1960	2300
19	4100	5520	5000	2380	4600	4200	5000	2850	2040	1940	1910	2300
20	4330	5520	4950	2180	4600	3900	5550	2600	2160	1920	1940	2550
21	4440	5600	5150	2300	4600	4000	4750	3050	2120	1920	1560	2840
22	4530	5700	5150	2400	4600	3180	4300	3800	2020	1860	1160	2820
23	4550	5850	5150	3300	4600	2400	3450	2200	2160	1750	1180	2680
24	4630	5850	5150	2180	4600	2150	2900	3650	2250	1800	1420	2720
25	4690	5800	5050	3300	4600	2560	2900	2550	1940	1670	1640	2770
26	4980	6950	5050	2180	4600	2700	3300	4100	1980	1710	1850	3100
27	4980	6920	5050	2400	4000	2750	3350	2450	2280	1780	2140	3100
28	4650	6900	5000	3300	3000	2880	3700	2250	2640	1940	2260	2750
29	4160	5670	5000	3300	---	3050	4100	2600	2600	1940	1820	2460
30	4600	5670	4950	3300	---	3200	4250	2600	2200	1980	1760	2460
31	5160	---	5000	3300	---	3350	---	2800	---	2050	2150	---
AVG	3860	5840	5010	4040	4430	2880	4190	3910	2260	1940	1870	2400

06436800 HORSE CREEK NEAR VALE, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	3.0	0.0	0.0	---	4.0	6.0	11.0	22.0	28.0	26.0	---
2	11.0	2.0	0.0	0.0	---	0.0	8.0	10.0	18.0	26.0	26.0	19.0
3	10.0	4.0	0.0	0.0	---	0.0	6.0	17.0	18.0	27.0	23.0	17.0
4	9.0	5.0	0.0	0.0	---	0.5	9.0	13.0	13.0	22.0	22.0	---
5	7.0	6.0	0.0	0.0	---	1.0	14.0	15.0	14.0	28.0	22.0	---
6	6.0	7.0	0.0	0.0	---	3.0	10.0	19.0	23.0	29.0	23.0	21.0
7	7.0	1.0	---	0.0	---	2.0	5.0	15.0	19.0	27.0	25.0	22.0
8	8.0	2.0	---	0.0	---	5.0	3.0	21.0	25.0	29.0	21.0	23.0
9	9.0	2.0	---	0.0	---	3.0	3.0	13.0	25.0	29.0	21.0	20.0
10	6.0	2.0	---	0.0	---	7.0	7.0	11.0	23.0	30.0	26.0	22.0
11	7.0	2.0	---	0.0	---	2.0	10.0	11.0	22.0	30.0	26.0	21.0
12	7.0	1.0	---	0.0	---	2.0	8.0	9.0	18.0	24.0	20.0	21.0
13	9.0	1.0	---	0.0	---	2.0	11.0	12.0	26.0	27.0	28.0	17.0
14	8.0	0.0	0.0	0.0	---	3.0	15.0	9.0	22.0	25.0	27.0	14.0
15	6.0	1.0	0.0	0.0	---	9.0	7.0	20.0	21.0	27.0	27.0	15.0
16	11.0	0.0	0.0	0.0	---	4.0	10.0	14.0	22.0	25.0	23.0	16.0
17	7.0	1.0	0.0	0.0	---	6.0	16.0	15.0	21.0	27.0	27.0	14.0
18	8.0	1.0	0.0	0.0	---	4.0	15.0	14.0	13.0	25.0	23.0	17.0
19	8.0	1.0	0.0	0.0	---	3.0	11.0	15.0	15.0	27.0	24.0	16.0
20	7.0	1.0	0.0	0.0	---	5.0	12.0	24.0	19.0	25.0	23.0	---
21	7.0	0.0	0.0	---	---	7.0	4.0	17.0	22.0	24.0	---	16.0
22	6.5	0.0	0.0	0.0	---	5.0	5.0	14.0	18.0	25.0	---	17.0
23	9.0	0.0	0.0	0.0	---	5.0	10.0	15.0	21.0	---	---	15.0
24	8.0	0.0	0.0	0.0	---	7.0	10.0	23.0	22.0	22.0	21.0	16.0
25	8.0	0.0	0.0	0.0	---	12.0	9.0	12.0	24.0	22.0	---	16.0
26	8.0	0.0	0.0	0.0	---	---	7.0	18.0	22.0	20.0	---	15.0
27	7.0	0.0	0.0	0.0	---	---	6.0	10.0	24.0	19.0	---	16.0
28	7.0	0.0	0.0	0.0	---	---	16.0	11.0	---	21.0	---	18.0
29	6.0	0.0	0.0	0.0	---	---	11.0	13.0	---	24.0	---	12.0
30	4.0	0.0	0.0	0.0	---	---	9.0	17.0	---	21.0	---	15.0
31	3.0	---	0.0	---	---	---	---	20.0	---	25.0	---	---
AVG	7.5	1.5	---	C 0.0	---	D 4.0	9.0	15.0	E 20.5	F 25.0	---	G 17.0

C Based on 29 days of data.
D Based on 25 days of data.
E Based on 27 days of data.
F Based on 30 days of data.
G Based on 26 days of data.

06437000 BELLE FOURCHE RIVER NEAR STURGIS, S. DAK.

LOCATION.--Lat 44°30'47", long 103°08'11", in SE¼NW¼ sec.3, T.6 N., R.8 E., Meade County, at gaging station, near right bank on downstream side of bridge on State Highway 34, 0.5 mi (0.8 km) upstream from Bear Creek, and 20 mi (32 km) northeast of Sturgis.

DRAINAGE AREA.--5,870 mi² (15,200 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: August 1954 to September 1958, October 1968 to September 1973.
Water temperatures: August 1954 to September 1958, October 1968 to September 1973.
Sediment records: October 1955 to September 1958.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 2,320 mg/l Jan. 1-31; minimum, 840 mg/l May 1-31.
Hardness: Maximum, 1,200 mg/l Nov. 1-30, Jan. 1-31; minimum, 520 mg/l May 1-31.
Specific conductance: Maximum daily, 3,600 micromhos Jan. 23; minimum daily, 810 micromhos May 10, 11.

Period of record:
Dissolved solids (1954-58, 1968-69, 1970-73): Maximum, 5,230 mg/l May 25, 1958; minimum, 761 mg/l Mar. 1-31, 1972.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 01-31	--	96	5.5	220	130	150	18	225	1200	22	.6	2.3
NOV., 01-30	--	55	6.6	240	150	210	19	247	1400	31	.6	5.1
JAN., 01-31	--	28	7.6	250	150	270	19	297	1400	42	.8	8.4
FEB., 01-28	--	209	9.3	200	78	180	11	224	840	15	.6	3.0
MAR., 01-31	--	497	8.0	190	76	110	19	217	840	18	.6	1.4
APR., 01-30	--	788	7.6	190	63	65	15	198	690	8.3	.6	.73
MAY 01-31	--	962	9.4	130	47	59	9.0	174	490	6.3	.5	.69
JUNE 01-30	--	789	13	160	56	62	5.7	201	590	7.7	.5	.80
JULY 01-31	--	383	13	200	84	110	13	192	920	13	.6	1.2
AUG., 01-31	--	481	7.9	220	86	100	14	179	900	13	.6	1.6
SEP., 01-30	--	216	5.6	210	96	120	14	197	960	15	.6	1.7
WTD. AVG.	--	--	9.4	179	69	85	12	196	732	11	.6	1.2
TIME WTD. AVG.	--	A 411	8.5	201	93	124	14	214	931	17	.6	2.6
TOT. LOAD (TONS)	--	--	3480	66200	25700	31400	4510	72500	271000	3960	208	452

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 18...	1100	B 89	4.6	240	120	140	16	249	1200	22	.6	1.6
DEC., 07...	1515	B 35	8.4	380	210	340	20	425	2000	50	.6	7.5
JAN., 08...	1330	B 16	8.2	400	210	280	20	493	2000	36	.9	4.0
FEB., 05...	1120	B 43	6.5	230	130	210	18	298	1200	32	.5	6.0
MAR., 06...	1120	B 401	6.9	180	67	98	13	229	740	14	.5	1.7
APR., 05...	0900	B 341	7.9	210	74	82	12	244	790	11	.3	.96
MAY 03...	1500	B 804	9.7	130	40	53	8.0	196	480	6.0	.4	.62
JUNE 07...	1200	B 1170	10	120	42	46	7.8	188	390	5.7	.5	.18
JULY 02...	1650	B 273	8.1	200	91	120	13	203	900	16	.7	.94
AUG., 03...	1300	B 296	6.5	220	83	97	11	203	920	13	.6	1.1
SEP., 07...	1000	B 222	6.9	210	91	120	11	203	980	17	.5	1.6

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Mean discharge based on 260 days of chemical analysis; mean discharge for 365 days, 163 cfs.
B Discharge at time of sampling.

06437000 BELLE FOURCHE RIVER NEAR STURGIS, S. DAK.--Continued

EXTREMES.--Continued
Period of record:--Continued
Hardness (1954-58, 1968-69, 1970-73): Maximum, 1,960 mg/l Nov. 16-17, 1955; minimum, 390 mg/l Mar. 1-31, 1972.
Specific conductance (1954-58, 1968-71, 1973): Maximum daily, 5,770 micromhos May 25, 1958; minimum daily, 650 micromhos Feb. 15, 1971.
Water temperatures (1954-58, 1968-71): Maximum, 30.0°C June 28, July 4, 7, 9, Aug. 7-8, 1970; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 3,250 mg/l Dec. 11; hardness, 1,900 mg/l Jan. 8; specific conductance, daily, 3,900 micromhos Jan. 8; water temperatures, 26.5°C July 4. Minimum observed during water year: Dissolved solids, 714 mg/l June 7; hardness, 460 mg/l June 7; water temperatures, freezing point on many days October to February. Additional samples collected for more comprehensive definition of water quality. Miscellaneous samples for chemical data published for water years 1950, 1952, and for sediment data for water year 1960.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.04	.04	400	1870	2.54	485	1100	900	2.0	2290	8.0	--
NOV. 01-30	.03	.04	420	2200	2.99	327	1200	1000	2.6	2640	8.1	--
JAN. 01-31	.03	.05	370	2320	3.16	175	1200	1000	3.3	2840	7.9	--
FEB. 01-28	.03	.06	180	1380	1.88	779	820	640	1.5	1750	7.9	--
MAR. 01-31	.02	.02	170	1370	1.86	1840	790	610	1.7	1740	7.9	--
APR. 01-30	.02	.03	140	1140	1.55	2430	730	570	1.0	1400	7.8	--
MAY 01-31	.02	.03	140	840	1.14	2180	520	380	1.1	1160	7.8	--
JUNE 01-30	.03	.05	180	998	1.36	2130	630	470	1.1	1360	7.9	--
JULY 01-31	.04	.07	260	1450	1.97	1500	850	690	1.6	1790	8.0	--
AUG. 01-31	.08	.08	260	1440	1.96	1870	900	760	1.4	1860	8.1	--
SEP. 01-30	.04	.12	260	1530	2.08	892	920	760	1.7	1980	8.0	--
WTD. AVG.	.04	.04	192	1200	1.63	--	732	574	1.3	1560	7.9	--
TIME WTD. AVG.	.04	.05	253	1510	2.05	--	879	708	1.7	1900	7.9	--
TOT. LOAD (TONS)	13	16	71	444000	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 10...	.03	.05	360	1870	2.54	449	1100	890	1.8	2260	7.9	12.0
DEC. 07...	.05	.05	540	3250	4.42	307	1800	1500	3.5	3780	7.3	.0
JAN. 08...	.03	.04	530	3220	4.38	146	1900	1500	2.8	3900	7.7	.0
FEB. 05...	.01	.02	320	2000	2.72	235	1100	870	2.7	2470	8.0	.0
MAR. 06..	.03	2.3	150	1240	1.69	1340	730	540	1.6	1620	8.0	.0
APR. 05...	.02	.09	210	1310	1.78	1210	830	630	1.2	1580	8.0	8.5
MAY 03...	.03	.03	120	833	1.13	1990	510	350	1.0	1130	8.0	13.0
JUNE 07...	.03	.23	140	714	.97	2260	460	310	.9	1000	7.9	21.5
JULY 02...	.02	.12	280	1450	1.97	1070	870	710	1.8	1870	8.2	26.0
AUG. 03...	.02	.21	270	1460	1.99	1170	890	720	1.4	1770	8.1	24.5
SEP. 07...	.01	.09	290	1550	2.11	929	900	740	1.7	1900	8.0	17.0

06437000 BELLE FOURCHE RIVER NEAR STURGIS, S. DAK.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)
ANALYSES OF ADDITIONAL SAMPLES											
OCT. 10...	1000	--	100	--	0	0	2	20	--	1	370
SEP. 07...	1000	.01	20	290	--	0	--	--	0	--	90

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2100	2800	3100	3200	2750	1530	1760	1080	1280	1800	1730	1870
2	2120	2750	3000	3250	2800	1740	1710	1130	1140	1840	1760	1890
3	2090	2700	3050	3300	2600	1900	1740	1120	1200	1860	1730	1880
4	2070	2650	3100	3300	2600	1950	1720	1130	1280	1810	1750	1880
5	2050	2700	3100	3350	2620	1860	1720	1110	1080	1830	1740	1800
6	2100	2800	3050	3250	1550	1760	1660	1030	1040	1840	1730	1770
7	2200	2900	3100	3200	1670	1710	1670	980	1080	1830	1720	1860
8	2400	2800	3050	3300	1770	1740	1660	910	1140	1840	1750	1930
9	2350	2680	3050	3400	1870	1500	1650	830	1200	1850	1720	1860
10	2300	2600	3000	3400	1800	1710	1660	810	1220	1840	1750	1860
11	2380	2750	3000	3350	1620	1820	1640	810	1280	1890	1800	1940
12	2400	2720	3000	3320	1580	1630	1640	860	1320	1910	1800	1960
13	2410	2700	3100	3300	1560	1840	1600	880	1380	1900	1770	2000
14	2420	2810	3100	3300	1550	1800	1560	890	1460	1850	1760	1900
15	2400	2650	3050	3250	1420	1500	1510	940	1500	1860	1740	1810
16	2400	2700	3050	3300	1520	1860	1500	960	1640	1860	1780	1900
17	2400	2750	3050	3300	1680	1700	1530	960	1720	1850	1810	1900
18	2400	2650	3100	3300	1620	1810	1520	950	1640	1850	1790	1930
19	2460	2750	3100	3350	1620	2090	1450	960	1640	1810	1810	1860
20	2510	2700	3100	3350	1650	2400	2010	1000	1720	1780	1760	1910
21	2450	2850	3050	3400	1600	2400	1420	1150	1420	1760	1780	1870
22	2500	2850	3000	3400	1700	2240	1440	1310	1380	1760	1760	1900
23	2500	2900	3000	3600	1750	1840	1430	1530	1340	1770	1560	1910
24	2520	3000	3050	3500	1800	2000	1420	1520	1340	1700	1530	1910
25	2520	2900	3100	3400	1840	1850	1410	2000	1340	1720	1500	1910
26	2600	2800	3100	3020	1600	1870	1390	1870	1360	1700	1650	1920
27	2600	2850	3100	2560	1480	1880	1230	1650	1380	1720	1850	1950
28	2600	2900	3100	2700	1400	1850	1180	1500	1410	1740	1850	1900
29	2600	2810	3050	2800	---	1790	1150	1330	1600	1750	1850	1960
30	2600	3100	3050	2910	---	1820	1160	1150	1840	1760	1850	2000
31	2650	---	3150	2800	---	1800	---	1150	---	1810	1760	---
AVG	2390	2700	3060	3250	1830	1820	1540	1150	1380	1810	1750	1900

06437000 BELLE FOURCHE RIVER NEAR STURGIS, S. DAK.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	DIS-SOLVED SILVER (AG) (UG/L) (01075)	DIS-SOLVED STRON-TIUM (SR) (UG/L) (01080)	DIS-SOLVED VANA-DIUM (V) (UG/L) (01085)	DIS-SOLVED ZINC (ZN) (UG/L) (01090)	DIS-SOLVED ALUM-INUM (AL) (UG/L) (01106)	DIS-SOLVED LITHIUM (LI) (UG/L) (01130)	DIS-SOLVED SELE-NIUM (SE) (UG/L) (01145)	TOTAL MERCURY (HG) (UG/L) (71900)
ANALYSES OF ADDITIONAL SAMPLES										
OCT. 10...	6	22	1	2600	1.3	--	10	100	7	--
SEP. 07...	--	--	--	2900	.0	0	--	100	14	.8

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	0.0	---	---	0.0	1.0	11.0	---	---	22.0	---	10.0
2	---	0.0	---	---	0.0	1.0	7.5	---	18.0	17.5	18.5	14.5
3	---	1.0	---	---	0.0	1.0	9.0	15.0	15.0	18.0	19.0	13.5
4	---	7.0	---	---	0.0	0.5	12.0	16.0	18.0	26.5	20.0	11.5
5	8.0	4.0	---	---	0.0	1.5	12.5	16.0	17.5	25.0	20.0	13.0
6	12.0	6.5	---	---	0.0	2.5	6.0	17.5	20.5	22.0	20.0	---
7	13.5	2.0	---	---	0.0	2.0	5.0	13.5	22.0	19.5	19.5	14.5
8	14.0	5.0	---	---	0.0	3.0	---	14.0	23.0	---	18.5	17.0
9	---	3.0	---	---	0.0	---	---	14.0	20.0	23.5	18.0	17.0
10	11.0	1.0	---	---	0.0	3.0	---	11.0	24.0	22.5	17.5	17.5
11	8.5	2.0	---	---	0.0	4.0	12.0	11.0	---	21.5	19.0	16.0
12	14.0	---	---	---	0.0	5.5	8.0	14.5	---	20.5	20.0	13.5
13	10.0	0.0	---	---	0.0	4.5	15.0	14.0	24.0	18.5	22.5	13.5
14	---	0.0	---	---	0.0	---	11.5	11.0	22.0	22.0	23.0	---
15	11.5	0.0	---	---	0.0	---	8.0	12.0	19.0	20.0	24.5	8.0
16	14.0	0.0	---	---	0.0	---	6.0	14.0	21.0	---	24.5	---
17	7.0	0.0	---	---	0.0	9.0	14.0	15.0	19.0	19.5	24.5	7.0
18	3.0	0.0	---	---	0.0	5.0	15.0	19.0	---	18.5	20.0	8.0
19	1.0	0.0	---	---	0.0	3.5	9.0	18.0	12.0	18.5	19.0	6.5
20	---	0.0	---	---	0.0	3.5	9.0	---	17.0	17.0	25.0	10.5
21	9.0	0.0	---	---	0.0	7.0	7.0	17.0	19.0	16.0	22.0	12.5
22	6.5	0.0	---	0.0	0.0	5.0	9.0	15.0	17.0	17.0	20.5	10.5
23	---	0.0	---	0.0	0.0	5.5	---	15.0	23.5	17.0	19.0	11.5
24	6.0	0.0	---	0.0	0.0	4.5	12.0	16.0	20.5	17.5	---	13.0
25	4.0	---	---	0.0	0.0	7.5	9.0	15.0	23.5	18.5	22.5	11.0
26	11.0	---	---	0.0	0.0	5.0	11.0	11.0	21.5	19.5	19.0	11.0
27	---	0.0	---	0.0	1.0	6.5	12.0	10.0	20.5	18.5	20.0	10.0
28	3.0	0.0	---	0.0	0.5	6.0	---	11.0	20.5	23.5	---	11.0
29	---	0.0	---	0.0	---	6.0	13.5	11.0	19.5	22.5	23.5	10.5
30	0.0	0.0	---	0.0	---	6.0	11.5	13.5	19.5	18.0	19.0	11.0
31	0.0	---	---	0.0	---	---	---	---	---	18.5	24.5	---
AVG	---	C 1.0	---	---	0.0	D 4.0	E 10.0	C 14.0	F 20.0	G 20.0	C 21.0	D 12.5

C Based on 28 days of data.
D Based on 27 days of data.
E Based on 25 days of data.
F Based on 26 days of data.
G Based on 29 days of data.

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, S. DAK.

LOCATION.--Lat 44°22'11", long 102°33'56", in NE¼NE¼ sec.29, T.5 N., R.13 E., Meade County, at gaging station, on right bank 10 ft (3 m) downstream from highway bridge, 4.3 mi (6.9 km) northwest of Elm Springs, and 4.7 mi (7.6 km) downstream from Hay Creek.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
OCT. 27...	1030	71	250	130	170	17	231	0	1200	26	.7
NOV. 30...	1300	96	290	170	250	17	298	0	1600	30	.6
DEC. 21...	1130	29	370	200	310	16	441	0	1900	41	.6
JAN. 30...	1330	71	300	180	320	20	365	0	1800	61	.7
MAR. 29...	1130	623	160	71	130	14	204	0	800	15	.5
APR. 25...	1430	1220	130	53	110	11	162	0	640	11	.5
MAY 24...	1100	326	170	66	90	8.6	198	0	680	12	.6
JUNE 19...	1400	284	190	77	120	10	201	0	790	13	.6
JULY 23...	1300	527	210	73	96	10	189	0	830	13	.6
AUG. 22...	1430	370	190	83	98	15	128	0	930	14	.7
SEP. 27...	1200	182	200	99	120	12	167	0	1000	17	.5

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
OCT., 1972 27...	1030	71	2.1	.07	.14	--	.66	.80	3.0	.00	.03
NOV. 30...	1300	96	4.7	.07	.48	--	.72	1.2	6.0	.01	.02
DEC. 21...	1130	29	4.0	.03	.31	.31	.39	.70	4.7	.02	.05
JAN., 1973 30...	1330	71	5.7	.10	.42	.42	1.1	1.6	7.4	.01	.04
MAR. 29...	1130	623	1.2	.03	--	.10	2.1	2.2	3.4	.02	1.4
APR. 25...	1430	1220	.69	.02	--	.08	2.4	2.5	3.2	.02	1.3
MAY 24...	1100	326	1.9	.01	--	.04	.92	.96	2.9	.00	.44
JUNE 19...	1400	284	.99	.01	--	.11	.65	.76	1.8	.02	.29
JULY 23...	1300	527	1.1	.02	--	.10	1.7	1.8	3.0	.01	.12
AUG. 22...	1430	370	.72	.01	--	.28	1.5	1.8	2.6	.01	.76
SEP. 27...	1200	182	1.9	.02	--	.13	.23	.36	2.3	.04	.03

06438000 BELLE FOURCHE RIVER NEAR ELM SPRINGS, S. DAK.--Continued

DRAINAGE AREA.--7,210 mi² (18,670 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1969 to September 1973 (discontinued).

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 27...	2.2	2210	3.01	425	1200	970	2.2	2450	8.1	5.0
NOV. 30...	4.8	2660	3.62	695	1400	1200	2.9	3030	7.7	.0
DEC. 21...	4.0	3640	4.95	285	1700	1400	3.2	3670	7.7	.0
JAN. 30...	5.8	3200	4.35	613	1500	1200	3.6	3460	8.0	.0
MAR. 29...	1.2	1440	1.96	2420	690	520	2.2	1770	8.2	6.5
APR. 25...	.71	1110	1.51	3660	540	410	2.1	1390	7.8	9.5
MAY 24...	2.0	1250	1.70	1100	700	530	1.5	1510	8.3	16.5
JUNE 19...	1.0	1420	1.93	1090	790	630	1.9	1690	7.3	15.0
JULY 23...	1.1	1450	1.97	2060	830	670	1.5	1690	8.0	17.5
AUG. 22...	.73	1460	1.99	1460	820	710	1.5	1730	8.1	27.0
SEP. 27...	1.9	1690	2.30	826	910	770	1.7	2010	8.0	15.0

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
OCT. 27...	1030	71	5.0	6.0	10.9	.6	8.4	180	12
NOV. 30...	1300	96	.0	7.0	12.7	1.4	8.2	32	24
DEC. 21...	1130	29	.0	5.0	10.3	1.0	7.9	<0	<0
JAN. 30...	1330	71	.0	10.0	12.6	1.2	83.0	<0	--
FEB. 20...	1330	344	.5	1.0	11.5	1.6	7.8	7	14
MAR. 29...	1130	623	6.5	6.0	10.4	1.6	8.2	3500	3000
APR. 25...	1430	1220	9.5	16.5	9.2	1.8	7.9	--	900
MAY 09...	1230	1330	16.5	24.0	8.4	1.5	7.9	225000	900
24...	1100	326	16.5	19.5	8.7	1.8	7.4	3600	560
JUNE 19...	1400	284	15.0	21.5	9.1	2.0	8.2	2000	435
JULY 23...	1300	527	17.5	20.0	8.2	2.2	7.7	8400	2100
AUG. 22...	1430	370	27.0	39.0	7.8	2.0	8.1	3100	1900
SEP. 27...	1200	182	15.0	16.5	9.5	2.4	8.2	490	30

06439300 CHEYENNE RIVER AT CHERRY CREEK, S. DAK.

LOCATION.--Lat 44°36'10", long 101°29'24", in NE¼NW¼ sec.5, T.7 N., R.22 E., Ziebach County, at gaging station, on left bank 0.5 mi (0.8 km) east of village of Cherry Creek, 0.5 mi (0.8 km) downstream from Cherry Creek, and 1.7 mi (2.7 km) upstream from Plum Creek.

DRAINAGE AREA.--23,900 mi² (61,900 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: June 1972 to September 1973 (discontinued).
Sediment records: October 1971 to September 1973.

EXTREMES.--1972-73:
Sediment concentrations: Maximum daily, 37,000 mg/l Apr. 21; minimum daily, 80 mg/l Nov. 15-17.

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
AUG., 1972											
23...	1200	564	170	75	130	12	136	0	900	96	1.1
SEP.											
13...	1100	430	170	75	140	11	143	0	890	32	.5
OCT.											
25...	1100	231	200	80	170	12	191	0	890	54	.5
NOV.											
28...	1200	281	210	86	180	11	234	0	980	57	.4
DEC.											
19...	1200	140	250	95	210	12	339	0	1100	73	.6
JAN., 1973											
29...	1330	295	210	83	150	11	267	0	950	50	.6
FEB.											
28...	1330	754	140	43	110	7.4	184	0	600	25	.4
MAR.											
26...	1500	3060	120	44	170	10	170	0	670	19	.4
APR.											
24...	1600	2840	100	35	130	9.7	141	0	560	12	.4
MAY											
22...	1400	1140	150	48	97	8.6	194	0	580	30	.5
JUNE											
19...	1130	649	160	59	130	10	181	0	710	25	.6
JULY											
30...	1400	622	180	69	120	12	158	0	830	26	.5
AUG.											
22...	1200	528	210	88	140	16	100	0	1100	29	.7
SEP.											
24...	1200	380	170	78	130	11	160	0	830	41	.7

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972											
23...	1200	564	.11	.00	.09	--	1.3	1.4	1.5	.04	.57
SEP.											
13...	1100	430	.23	.00	.05	--	.53	.58	.81	.02	.08
OCT.											
25...	1100	231	.11	.00	.03	--	1.4	1.4	1.5	.00	.03
NOV.											
28...	1200	281	1.3	.02	.02	--	.46	.48	1.8	.01	.08
DEC.											
19...	1200	140	4.3	.01	.14	.14	.28	.42	4.7	.08	.14
JAN., 1973											
29...	1330	295	1.3	.03	.15	.15	.95	1.1	2.4	.08	.18
FEB.											
28...	1330	754	1.3	.03	--	.16	1.6	1.8	3.3	.05	.73
MAR.											
26...	1500	3060	.78	.01	--	.17	2.9	3.1	3.9	.02	2.6
APR.											
24...	1600	2840	.62	.02	--	.14	3.9	4.0	4.7	.02	2.5
MAY											
22...	1400	1140	1.8	.01	--	.01	.78	.79	2.6	.02	.43
JUNE											
19...	1130	649	.37	.00	--	.05	.82	.87	1.3	.01	.43
JULY											
30...	1400	622	.63	.01	--	.01	1.3	1.3	2.0	.00	.73
AUG.											
22...	1200	528	.31	.00	--	.17	1.2	1.4	1.8	.00	.47
SEP.											
24...	1200	380	.72	.01	--	.90	.00	.88	1.7	.03	.43

06439300 CHEYENNE RIVER AT CHERRY CREEK, S. DAK.--Continued

EXTREMES.--1972-73:--Continued
Sediment discharge: Maximum daily, 655,000 tons Apr. 21; minimum daily, 15 tons Dec. 14.

Period of record:
Sediment concentrations: Maximum daily, 65,000 mg/l June 12, 1972; minimum daily, 80 mg/l Nov. 15-17, 1973.
Sediment discharge: Maximum daily, 2,530,000 tons June 12, 1972; minimum daily, 15 tons Dec. 14, 1973.

REMARKS.--Records poor. Flow affected by ice Nov. 16-21, Dec. 1 to Mar. 2. Sediment-discharge records prior to Oct. 1, 1971, are on file in the District office, Corps of Engineers, Omaha, Nebr.

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
AUG., 1972 23...	.11	--	1500	2.04	2280	730	620	2.1	1790	7.9	21.0
SEP. 13...	.23	--	1490	2.03	1730	2600	1500	3.0	1840	8.0	20.5
OCT. 25...	.11	--	1550	2.11	967	830	670	2.6	2022	7.8	6.0
NOV. 28...	1.3	--	1770	2.41	1340	880	690	2.6	2150	8.0	.0
DEC. 19...	4.3	--	2260	3.07	854	1000	740	2.9	2460	7.8	.0
JAN., 1973 29...	1.3	--	1760	2.39	1400	870	650	2.2	2030	8.2	.0
FEB. 28...	1.3	--	1100	1.50	2240	530	380	2.1	1430	8.0	3.0
MAR. 26...	.79	--	1210	1.65	10000	480	340	3.4	1630	7.8	7.0
APR. 24...	.64	--	997	1.36	7640	390	280	2.9	1270	7.8	10.5
MAY 22...	1.8	--	1130	1.54	3480	570	410	1.8	1420	8.2	21.5
JUNE 19...	.37	--	1260	1.71	2210	640	490	2.2	1600	7.5	15.0
JULY 30...	.64	--	1460	1.99	2450	730	600	1.9	1670	7.8	26.0
AUG. 22...	.31	--	1650	2.24	2350	890	800	2.0	1910	8.1	21.0
SEP. 24...	.73	--	1510	2.05	1550	750	610	2.1	1860	8.0	15.0

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972 23...	1200	564	21.0	29.5	8.6	1.0	8.4	--	4400
SEP. 13...	1100	430	20.5	22.5	8.0	.8	--	880	180
OCT. 25...	1100	231	6.0	10.5	11.6	.4	8.0	75	6
NOV. 20...	1200	201	.0	3.0	13.7	2.2	8.3	184	3
DEC. 19...	1200	140	.0	3.5	12.2	2.0	8.0	--	--
JAN., 1973 29...	1330	295	.0	4.0	16.5	1.8	8.6	<0	--
FEB. 28...	1330	754	3.0	17.5	12.0	1.8	8.1	--	<0
MAR. 26...	1500	3060	7.0	14.5	9.6	2.0	8.0	800	380
APR. 24...	1600	2840	10.5	10.0	8.7	1.8	10.2	--	--
MAY 07...	1400	1550	19.0	31.0	7.9	1.8	8.3	3000	130
22...	1400	1140	21.5	27.0	8.5	2.0	7.3	7200	180
JUNE 19...	1130	649	15.0	16.5	91.0	2.0	8.2	700	445
JULY 30...	1400	622	26.0	25.0	8.0	2.5	8.1	2800	580
AUG. 23...	1200	528	21.0	21.0	8.7	2.6	8.1	1300	950
SEP. 24...	1200	380	15.0	17.5	9.9	2.4	7.9	525	370

06439300 CHEYENNE RIVER AT CHERRY CREEK, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	387	150	157	180	116	56	150	160	65
2	379	111	114	164	117	52	120	155	50
3	346	110	103	192	120	62	90	150	36
4	334	111	100	299	275	222	80	145	31
5	346	115	107	322	300	261	70	140	26
6	396	121	129	284	250	192	65	135	24
7	375	120	122	262	186	132	60	130	21
8	334	115	104	251	175	119	50	125	17
9	322	113	98	244	160	105	50	120	16
10	307	110	91	231	150	94	60	115	19
11	280	106	80	228	135	83	60	110	18
12	266	105	75	244	125	82	60	105	17
13	266	105	75	258	115	80	60	100	16
14	258	105	73	234	95	60	60	95	15
15	255	106	73	169	80	37	70	90	17
16	255	106	73	170	80	37	80	90	19
17	244	107	70	170	80	37	100	105	28
18	234	107	68	180	100	49	120	120	39
19	244	108	71	200	150	81	140	135	51
20	237	108	69	220	160	95	160	150	65
21	237	109	70	220	175	104	200	165	89
22	231	109	68	244	170	112	250	180	122
23	231	110	69	218	150	88	200	200	108
24	231	110	69	202	125	68	200	195	105
25	234	111	70	189	100	51	200	190	103
26	234	111	70	228	150	92	200	185	100
27	234	112	71	244	175	115	250	180	122
28	231	112	70	244	175	115	230	175	109
29	231	113	70	199	170	91	200	170	92
30	237	114	73	167	165	74	150	165	67
31	228	115	71	--	--	--	150	160	65
TOTAL	8624	--	2623	6657	--	2846	3935	--	1672

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	150	155	63	300	120	97	900	200	486
2	150	150	61	300	115	93	1200	3000	9720
3	150	145	59	300	115	93	1920	5000	25900
4	100	140	38	250	110	74	1330	4000	14400
5	90	135	33	240	120	78	1150	3000	9320
6	80	130	28	230	125	78	918	2600	6440
7	75	125	25	230	125	78	846	2300	5250
8	70	120	23	300	115	93	762	2100	4320
9	75	115	23	350	100	95	692	1900	3550
10	90	110	27	400	105	113	671	1800	3260
11	110	105	31	450	110	134	645	1700	2960
12	130	105	37	500	130	176	607	1600	2620
13	150	110	45	450	125	152	595	1500	2410
14	170	120	55	400	120	130	822	2800	6210
15	200	130	70	350	120	113	1950	6000	31600
16	200	130	70	400	125	135	1000	3000	8100
17	200	140	76	450	115	140	1000	2000	5400
18	200	135	73	450	115	140	1500	5000	20300
19	200	140	76	500	120	162	1500	6000	24300
20	200	140	76	550	125	186	1700	8000	36700
21	200	145	78	600	120	194	1890	10000	51000
22	200	135	73	600	115	186	2500	8500	57400
23	200	140	76	600	120	194	2500	6000	40500
24	200	140	76	600	130	211	2300	4500	27900
25	250	135	91	650	125	219	2000	4000	21600
26	250	135	91	700	120	227	2640	6190	44100
27	250	140	95	750	120	243	2300	5000	31100
28	250	130	88	800	125	270	1720	4500	20900
29	300	130	105	--	--	--	1600	4000	17300
30	300	125	101	--	--	--	1280	3500	12100
31	300	120	97	--	--	--	1040	3300	9270
TOTAL	5490	--	1960	12700	--	4104	43478	--	556416

06439300 CHEYENNE RIVER AT CHERRY CREEK, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	893	3010	7260	1630	3470	15300	2620	662	4680
2	838	2530	5720	1600	3490	15100	2100	663	3760
3	704	476	1010	2030	16800	92100	1980	1800	9620
4	762	609	1250	1780	12500	60100	2440	13000	85600
5	747	473	954	1660	8000	35900	2680	7300	52800
6	719	425	825	1560	6000	25300	2300	4800	29800
7	678	410	751	1540	4800	20000	2130	3500	20100
8	639	444	766	1700	3600	16500	1880	2800	14200
9	620	417	698	1850	2500	12500	1590	2000	8590
10	595	450	723	1890	1500	7650	1280	1500	5180
11	572	384	593	1950	1120	5900	1150	1000	3110
12	548	360	533	2130	1600	9200	986	600	1600
13	532	370	531	2450	17200	114000	935	620	1570
14	516	377	525	2120	12000	68700	861	640	1490
15	526	379	538	2010	7500	40700	838	660	1490
16	526	414	588	1720	6000	27900	785	680	1440
17	554	420	628	1710	4200	19400	725	700	1370
18	548	400	592	1560	3200	13500	660	720	1280
19	633	1800	3080	1520	2200	9030	633	732	1250
20	1190	3800	12200	1430	1400	5410	607	715	1170
21	6560	37000	655000	1400	1000	3780	620	700	1170
22	8250	22000	490000	1140	633	1950	954	3000	7730
23	5030	10000	136000	893	497	1200	1240	6800	22800
24	2950	6000	47800	733	502	994	1080	4100	12000
25	2100	4000	22700	633	558	954	995	3000	8060
26	1680	2220	10100	607	389	638	893	2400	5790
27	1500	4140	16800	861	512	1190	822	2000	4440
28	1640	3800	16800	3500	8700	82200	740	1600	3200
29	1690	7500	34200	4350	15500	182000	652	1300	2290
30	1460	5000	19700	3900	6000	63200	521	1100	1550
31	--	--	--	3440	2500	23200	--	--	--
TOTAL	46280	--	1488865	57297	--	975496	37697	--	519130

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	423	1000	1140	560	410	620	392	341	361
2	405	900	984	499	334	450	409	600	663
3	392	800	847	455	298	366	450	800	972
4	387	700	731	418	220	248	690	1200	2240
5	362	600	586	383	197	204	674	1700	3090
6	334	550	496	362	199	195	505	1150	1570
7	523	10800	15300	358	199	192	455	950	1170
8	427	8800	10100	387	214	224	441	850	1010
9	350	7040	6650	375	426	431	400	800	864
10	366	7400	7310	346	155	145	371	700	701
11	983	35300	93700	346	172	161	354	600	573
12	465	26300	33000	342	194	179	334	500	451
13	375	11700	11800	342	202	187	310	450	377
14	338	3000	2740	371	225	225	295	400	319
15	322	2150	1870	396	202	216	314	350	297
16	318	589	506	418	228	257	318	300	258
17	322	381	331	392	218	231	346	500	467
18	322	334	290	379	215	220	436	800	942
19	342	265	245	379	210	215	383	750	776
20	358	6500	6280	358	210	203	354	700	669
21	396	15200	16300	346	205	192	350	650	614
22	1410	13500	51400	354	200	191	346	600	561
23	1070	11000	31800	479	1200	1550	362	580	567
24	1260	17200	58500	2070	10000	55900	392	565	598
25	969	9800	25600	3460	20300	190000	362	525	513
26	995	5700	15300	1700	6300	28900	371	500	501
27	1000	3800	10300	890	2500	6010	387	475	496
28	740	3240	6470	560	1400	2120	371	450	451
29	665	3150	5660	436	900	1060	409	425	469
30	626	1240	2100	375	500	506	387	400	418
31	626	666	1130	338	343	313	--	--	--
TOTAL	17871	--	419466	18874	--	291911	11968	--	22958

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	270871
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	4087447

06439300 CHEYENNE RIVER AT CHERRY CREEK, S. DAK.--Continued

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)
MAR.							
21...	1045	6.5	1860	10100	50700	64	70
26...	1500	7.0	3060	6190	51100	34	41
APR.							
24...	1430	10.5	2840	6780	52000	53	62
JULY							
07...	1900	--	494	19800	26400	5	7
11...	1045	24.5	1080	40800	119000	7	11

DATE	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. FALL DIAM. % FINER THAN .062 MM (70342)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)	SUS. SED. FALL DIAM. % FINER THAN .500 MM (70345)	SUS. SED. FALL DIAM. % FINER THAN 1.00 MM (70346)
MAR.						
21...	88	99	100	--	--	--
26...	59	93	98	100	--	--
APR.						
24...	82	94	97	100	--	--
JULY						
07...	95	96	96	96	99	100
11...	95	100	--	--	--	--

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	NUMBER OF SAM-PLING POINTS (00063)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
MAR.							
26...	1500	7.0	1	3060	23	30	43
APR.							
17...	1200	13.0	1	542	--	0	14
24...	1430	10.5	1	2840	30	42	46
MAY							
03...	0940	10.0	1	2200	1	2	8
JUNE							
12...	1700	25.0	1	509	--	0	5
JULY							
30...	1800	26.0	1	622	68	84	94
AUG.							
23...	1200	21.0	1	52	75	85	97
SEP.							
24...	1200	15.0	1	380	30	49	98

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
MAR.							
26...	49	53	57	61	67	80	100
APR.							
17...	71	95	99	100	--	--	--
24...	47	48	49	51	54	59	100
MAY							
03...	48	53	57	62	70	89	100
JUNE							
12...	22	36	44	54	69	97	100
JULY							
30...	99	99	100	--	--	--	--
AUG.							
23...	100	--	--	--	--	--	--
SEP.							
24...	100	--	--	--	--	--	--

06439500 CHEYENNE RIVER NEAR EAGLE BUTTE, S. DAK.

LOCATION.--Lat 44°41'44", long 101°13'08", in NE¼SE¼ sec.32, T.9 N., R.24 E., Haakon County, at discontinued gaging station on downstream side near center of bridge on State Highway 63, 0.5 mi (0.8 km) upstream from Hermaphrodite Creek and 21 mi (33.8 km) south of Eagle Butte.

DRAINAGE AREA.--24,500 mi² (63,500 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: November 1972 to September 1973.

REMARKS.--Station is affected by backwater from Oahe Dam; discharge records not available. Miscellaneous samples of chemical data published for June 1972.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
NOV. 07...	1200	2.9	190	81	170	12	197	900	53	.5	.66
FEB. 13...	0910	6.2	240	98	170	14	305	1100	43	.6	2.1
MAR. 21...	1200	13	69	23	150	8.6	175	480	14	.6	1.1
APR. 17...	1345	7.3	180	71	120	10	190	830	28	.2	.45
MAY 16...	1230	10	150	43	83	8.4	193	490	35	.4	.52
JULY 26...	1230	13	180	55	140	12	165	800	26	.6	1.1
AUG. 14...	1430	6.9	200	86	150	14	124	990	32	.5	.21

DATE	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
NOV. 07...	.01	270	1510	2.05	810	650	2.6	2000	7.3	6.0
FEB. 13...	.07	320	1840	2.50	1000	760	2.3	2300	7.8	.0
MAR. 21...	7.2	130	871	1.21	320	170	3.7	1260	8.0	7.0
APR. 17...	.22	210	1350	1.94	740	590	1.9	1710	7.7	14.0
MAY 16...	.37	130	920	1.35	550	400	1.5	1300	7.7	16.5
JULY 26...	1.2	260	1320	1.80	680	540	2.3	1670	7.9	23.0
AUG. 14...	.11	290	1550	2.19	860	760	2.2	1920	8.1	29.0

06439500 CHEYENNE RIVER NEAR EAGLE BUTTE, S. DAK.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	CYANIDE (CN) (MG/L) (00720)	DIS-SOLVED ARSENIC (AS) (UG/L) (01000)	SUS-PENDED ARSENIC (AS) (UG/L) (01001)	TOTAL ARSENIC (AS) (UG/L) (01002)	DIS-SOLVED BORON (B) (UG/L) (01020)	SUS-PENDED BORON (B) (UG/L) (01021)	TOTAL BORON (B) (UG/L) (01022)	DIS-SOLVED CAD-MIUM (CD) (UG/L) (01025)	SUS-PENDED CAD-MIUM (CD) (UG/L) (01026)	TOTAL CAD-MIUM (CD) (UG/L) (01027)	DIS-SOLVED CHRO-MIUM (CR) (UG/L) (01030)
NOV., 07...	1200	.00	11	--	--	270	--	--	0	--	--	0
FEB., 13...	0910	.00	13	--	--	320	--	--	0	--	--	10
MAR., 21...	1200	.01	59	2100	2200	130	340	470	0	10	10	0
APR., 17...	1345	.00	30	180	210	210	150	360	0	0	0	20
MAY 16...	1230	.00	30	280	310	130	260	390	0	0	<10	0
JULY 26...	1230	.02	20	240	260	260	350	610	0	10	<10	10
AUG., 14...	1430	.00	11	17	28	290	--	--	1	9	10	10

DATE	SUS-PENDED CHRO-MIUM (CR) (UG/L) (01031)	TOTAL CHRO-MIUM (CR) (UG/L) (01034)	DIS-SOLVED COBALT (CO) (UG/L) (01035)	SUS-PENDED COBALT (CO) (UG/L) (01036)	TOTAL COBALT (CO) (UG/L) (01037)	DIS-SOLVED COPPER (CU) (UG/L) (01040)	SUS-PENDED COPPER (CU) (UG/L) (01041)	TOTAL COPPER (CU) (UG/L) (01042)	SUS-PENDED IRON (FE) (UG/L) (01044)	TOTAL IRON (FE) (UG/L) (01045)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED LEAD (PB) (UG/L) (01049)
NOV., 07...	--	--	1	--	--	6	--	--	--	--	90	1
FEB., 13...	--	--	1	--	--	10	--	--	--	--	310	0
MAR., 21...	120	120	0	100	100	14	370	390	260000	260000	9	0
APR., 17...	0	20	1	<19	<20	10	10	20	15000	15000	50	1
MAY 16...	20	20	1	19	20	10	40	50	20000	20000	120	6
JULY 26...	60	70	0	25	25	6	110	120	170000	170000	30	1
AUG., 14...	0	0	0	25	<25	5	5	10	2200	2100	30	0

DATE	SUS-PENDED LEAD (PB) (UG/L) (01050)	TOTAL LEAD (PB) (UG/L) (01051)	SUS-PENDED MAN-GANESE (MN) (UG/L) (01054)	TOTAL MAN-GANESE (MN) (UG/L) (01055)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED MOLYB-DENUM (MO) (UG/L) (01060)	SUS-PENDED MOLYB-DENUM (MO) (UG/L) (01061)	TOTAL MOLYB-DENUM (MO) (UG/L) (01062)	DIS-SOLVED NICKEL (NI) (UG/L) (01065)	SUS-PENDED NICKEL (NI) (UG/L) (01066)	TOTAL NICKEL (NI) (UG/L) (01067)	DIS-SOLVED SILVER (AG) (UG/L) (01075)
NOV., 07...	--	--	--	--	40	4	--	--	13	--	--	0
FEB., 13...	--	--	--	--	190	5	--	--	30	--	--	0
MAR., 21...	300	300	7200	7200	20	1	3	4	1	220	230	0
APR., 17...	<99	<100	500	500	0	7	0	7	11	<37	<50	0
MAY 16...	<100	<100	1200	1200	0	5	1	6	10	40	50	0
JULY 26...	99	100	1900	1900	0	8	0	8	5	70	75	0
AUG., 14...	50	<50	120	120	0	7	0	7	8	17	25	0

06439500 CHEYENNE RIVER NEAR EAGLE BUTTE, S. DAK.--Continued

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	SUSPENDED SILVER (AG) (UG/L) (01076)	TOTAL SILVER (AG) (UG/L) (01077)	DISSOLVED STRONTIUM (SR) (UG/L) (01080)	SUSPENDED STRONTIUM (SR) (UG/L) (01081)	TOTAL STRONTIUM (SR) (UG/L) (01082)	DISSOLVED VANADIUM (V) (UG/L) (01085)	SUSPENDED VANADIUM (V) (UG/L) (01086)	TOTAL VANADIUM (V) (UG/L) (01087)	DISSOLVED ZINC (ZN) (UG/L) (01090)	SUSPENDED ZINC (ZN) (UG/L) (01091)	TOTAL ZINC (ZN) (UG/L) (01092)	TOTAL ALUMINUM (AL) (UG/L) (01105)
NOV. 07...	--	--	2200	--	--	1.4	--	--	--	--	--	--
FEB. 13...	--	--	2600	--	--	.1	--	--	--	--	--	--
MAR. 21...	15	16	1100	1300	2400	3.1	160	170	20	750	750	190000
APR. 17...	0	<10	2500	0	2300	.0	20	20	20	30	40	4000
MAY 16...	<10	<10	1900	0	1600	.0	100	100	20	120	140	100
JULY 26...	10	10	2000	300	2300	2.3	160	160	20	290	310	0
AUG. 14...	10	<10	3100	0	2400	.4	2.0	2.4	20	10	30	20

DATE	DISSOLVED ALUMINUM (AL) (UG/L) (01106)	DISSOLVED LITHIUM (LI) (UG/L) (01130)	SUSPENDED LITHIUM (LI) (UG/L) (01131)	TOTAL LITHIUM (LI) (UG/L) (01132)	DISSOLVED SELENIUM (SE) (UG/L) (01145)	SUSPENDED SELENIUM (SE) (UG/L) (01146)	TOTAL SELENIUM (SE) (UG/L) (01147)	DISSOLVED MERCURY (HG) (UG/L) (71890)	TOTAL MERCURY (HG) (UG/L) (71900)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)	SUSPENDED SOLIDS (MG/L) (70299)
NOV. 07...	80	110	--	--	5	--	--	--	.1	--	--
FEB. 13...	100	120	--	--	1	--	--	--	.0	--	--
MAR. 21...	20	80	200	280	5	0	0	.0	1.0	--	10400
APR. 17...	30	90	0	90	4	2	6	.0	.1	.06	219
MAY 16...	0	50	10	60	5	0	5	--	.0	--	830
JULY 26...	30	70	90	160	3	1	4	.0	.2	.02	3970
AUG. 14...	610	90	10	100	6	0	6	.0	.0	.10	--

PESTICIDES

DATE	TIME	ALDRIN (UG/L) (39330)	CHLORDANE (UG/L) (39350)	DDD (UG/L) (39360)	DDE (UG/L) (39365)	DDT (UG/L) (39370)	DIAZINON (UG/L) (39570)	DIELDRIN (UG/L) (39380)	ENDRIN (UG/L) (39390)	HEPTACHLOR (UG/L) (39410)
MAR. 21...	1200	.00	.0	.00	.00	.00	.00	.00	.00	.00
APR. 17...	1345	.00	.0	.00	.00	.00	.00	.00	.00	.00
AUG. 14...	1430	.00	.0	.00	.00	.00	.00	.00	.00	.00
SEP. 18...	1210	.00	.0	.00	.00	.00	.00	.00	.00	.00

DATE	HEPTACHLOR EPOXIDE (UG/L) (39420)	LINDANE (UG/L) (39340)	MALATHION (UG/L) (39530)	METHYL PARATHION (UG/L) (39600)	PARATHION (UG/L) (39540)	2,4-D (UG/L) (39730)	2,4,5-T (UG/L) (39740)	SILVEX (UG/L) (39760)	PCB (UG/L) (39516)
MAR. 21...	.00	.00	.00	.00	.00	.00	.00	.00	.0
APR. 17...	.00	.00	.00	.00	.00	.00	.00	.00	.0
AUG. 14...	.00	.00	.00	.00	.00	.03	.00	.00	.0
SEP. 18...	.00	.00	.00	.00	.00	.00	.00	.00	.0

06440000 MISSOURI RIVER AT PIERRE, S. DAK.

LOCATION.--Lat 44°22'25", long 100°22'20", in SE¼ sec.21, T.5 N., R.31 E., Hughes County, at gaging station, near right bank on downstream side of pier of Chicago and North Western Transportation Co. Bridge, 1.3 mi (2.1 km) upstream from Bad River, 5.8 mi (9.3 km) downstream from Oahe Dam, and at mile 1066.5 (1,716 km).

DRAINAGE AREA.--243,500 mi² (630,700 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: July 1971 to September 1973.
Water temperatures: July 1971 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 485 mg/l July 1-31; minimum, 448 mg/l Oct. 1-31.
Hardness: Maximum, 230 mg/l Mar. 1 to July 31; minimum, 220 mg/l Oct. 1 to Feb. 28, Aug. 1 to Sept. 30.
Specific conductance: Maximum daily, 790 micromhos Mar. 25; minimum daily, 690 micromhos May 18, 24-31, Sept. 2-30.
Water temperatures: Maximum, 22.0°C on several days July to September; minimum, freezing point on several days in January.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 01-31	--	37700	6.5	52	21	64	4.9	181	200	9.2	.5	.27
NOV., 01-30	--	29600	6.5	54	21	66	4.9	187	200	8.9	.6	.24
DEC., 01-31	--	26900	6.7	54	20	64	5.0	190	200	10	.6	.22
JAN., 01-31	--	19100	6.5	55	21	65	4.8	182	200	9.1	.5	.29
FEB., 01-28	--	23600	6.6	55	21	65	4.8	186	200	10	.5	.29
MAR., 01-31	--	15300	6.6	57	22	66	4.9	190	200	9.3	.5	.27
APR., 01-30	--	16500	7.5	57	21	66	4.7	188	210	9.8	.6	.21
MAY 01-31	--	21100	6.7	56	21	67	5.1	187	200	10	.6	.31
JUNE 01-30	--	23500	6.4	55	22	68	4.9	187	220	9.3	.4	.27
JULY 01-31	--	27200	9.5	56	22	68	4.9	189	220	9.8	.5	.21
AUG., 01-31	--	33100	6.5	54	21	67	5.2	188	200	10	.5	.28
SEP., 01-30	--	21900	6.7	55	21	66	5.5	186	200	9.7	.5	.29
WTD. AVG.	--	--	6.9	55	21	66	5.0	187	204	9.6	.5	.26
TIME WTD. AVG.	--	24700	6.9	55	21	66	5.0	187	204	9.6	.5	.26
TOT. LOAD (TONS)	--	--	167000	1329000	513000	1597000	121000	4532000	4956000	233000	12700	6200

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT., 31...	1215	A47100	6.5	50	20	66	4.6	181	190	8.7	.6	.78
NOV., 28...	1045	A43600	6.5	53	20	67	4.6	184	190	8.7	.5	.60
DEC., 04...	1300	A31000	6.7	56	21	69	5.1	188	200	8.6	.6	.24
JAN., 10...	1050	A50000	6.9	55	20	65	5.1	189	190	8.0	.5	.21
FEB., 27...	1115	A47000	7.2	55	21	68	4.8	193	210	9.2	.5	.17
MAR., 30...	1030	A19000	6.6	56	22	71	4.5	185	210	9.4	.4	.21
APR., 23...	1300	A23500	6.9	55	22	66	4.0	189	210	9.0	.4	.20
MAY 31...	1200	A26000	6.2	56	22	68	4.7	194	200	9.1	.6	.13
JUNE 26...	1010	A42900	6.5	56	22	67	5.0	188	210	11	.5	.94
JULY 27...	1015	A47300	6.2	55	21	66	4.6	193	210	10	.5	.13
AUG., 15...	1000	A33500	6.5	54	21	67	4.8	186	200	9.1	.4	.15

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.
A Discharge at time of sampling.

06440000 MISSOURI RIVER AT PIERRE, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids: Maximum, 494 mg/l Sept. 1-30, 1971, Jan. 1-31, 1972; minimum, 436 mg/l Sept. 16-30, 1972.
Hardness: Maximum, 250 mg/l Nov. 1-30, 1971; minimum, 210 mg/l Sept. 16-30, 1972.
Specific conductance (1972-73): Maximum daily, 790 micromhos Mar. 25, 1973; minimum daily, 690 micromhos May 18, 24-31, Sept. 2-30, 1973.
Water temperatures (1972-73): Maximum, 22.0°C on several days July to September 1973; minimum, freezing point on several days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum daily observed during period: Specific conductance, 734 micromhos June 26. Minimum observed during period: Hardness, 210 mg/l Oct. 31, Nov. 28; specific conductance, daily, 680 micromhos Nov. 28. Additional samples collected for more comprehensive definition of water quality. Discharge furnished by District office, U.S. Army, Corps of Engineers, Omaha, Nebraska.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.02	.02	120	448	.61	45600	220	68	1.9	684	8.1	--
NOV. 01-30	.02	.02	130	453	.62	36200	220	68	1.9	697	8.1	--
DEC. 01-31	.03	.03	130	455	.62	33000	220	61	1.9	693	8.2	--
JAN. 01-31	.00	.01	130	453	.62	23400	220	75	1.9	703	7.9	--
FEB. 01-28	.02	.02	120	456	.62	29100	220	71	1.9	713	7.8	--
MAR. 01-31	.03	.03	120	461	.63	19000	230	77	1.9	726	8.1	--
APR. 01-30	.00	.02	130	470	.64	20900	230	75	1.9	722	8.2	--
MAY 01-31	.01	.03	110	460	.63	26200	230	73	1.9	728	8.0	--
JUNE 01-30	.03	.05	120	480	.65	30500	230	75	2.0	729	8.1	--
JULY 01-31	.04	.06	120	485	.66	35600	230	75	2.0	737	8.0	--
AUG. 01-31	.03	.04	110	458	.62	40900	220	67	2.0	724	8.2	--
SEP. 01-30	.15	.17	140	458	.62	27100	220	71	1.9	717	8.1	--
WTD. AVG.	.03	.04	123	461	.63	--	224	71	1.9	712	8.1	--
TIME WTD. AVG.	.03	.04	123	461	.63	--	224	71	1.9	714	8.1	--
TOT. LOAD (TONS)	768	993	2980	11192000	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 31...	.01	.05	--	442	.60	56200	210	59	2.0	682	8.0	10.0
NOV. 28...	--	.06	--	446	.64	55300	210	64	2.0	680	8.1	5.0
DEC. 04...	--	.08	--	460	.73	45000	220	67	2.0	696	8.2	3.0
JAN. 10...	.03	.04	--	445	.63	62600	220	65	1.9	694	8.3	.0
FEB. 27...	.04	.04	--	473	.69	64200	220	66	2.0	724	8.2	1.9
MAR. 30...	--	.01	--	473	.64	24300	230	79	2.0	733	8.0	9.0
APR. 23...	--	.02	--	470	.67	31100	230	73	1.9	722	8.0	5.5
MAY 31...	--	.03	--	463	.67	34500	230	71	2.0	717	8.1	12.5
JUNE 26...	--	.04	--	479	.66	57700	230	76	1.9	734	8.0	16.0
JULY 27...	--	.02	--	469	.65	61300	220	66	1.9	712	7.8	20.0
AUG. 15...	--	.01	--	458	.63	42200	220	64	2.0	704	8.5	20.0

06440000 MISSOURI RIVER AT PIERRE, S. DAK.--Continued

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972												
29...	1125	53300	.13	.00	.01	--	.16	.17	.30	.01	.02	.03
SEP.												
29...	1000	52700	.18	.00	.03	--	.11	.14	.32	.00	.01	.03
OCT.												
31...	1215	47100	.78	.00	.01	--	.29	.30	1.1	.02	.01	.05
NOV.												
28...	1045	43600	.60	.00	.01	--	.19	.20	.80	.05	--	.08
DEC.												
04...	1300	31000	.24	.00	.06	.06	.22	.28	.52	.01	--	.08
JAN., 1973												
10...	1050	50000	.21	.00	.03	.03	.14	.17	.38	.03	.03	.04
FEB.												
27...	1115	47000	.17	.00	--	.04	.14	.18	.42	.04	.04	.04
MAR.												
30...	1030	19000	.21	.00	--	.04	.09	.13	.32	.01	--	.01
APR.												
23...	1300	23500	.20	.00	--	.14	.07	.21	.42	.00	--	.02
MAY												
31...	1200	26000	.13	.00	--	.02	.12	.14	.27	.01	--	.03
JUNE												
26...	1010	42900	.03	.01	--	.00	.07	.07	1.4	.04	--	.05
JULY												
27...	1015	47500	.13	.00	--	.01	.36	.37	.52	.00	--	.02
AUG.												
15...	1000	33500	.14	.01	--	.03	.17	.20	.38	.00	--	.01

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972									
29...	1130	53300	20.6	26.4	8.0	.8	7.6	7	10
SEP.									
29...	1000	52700	15.6	8.0	10.0	1.1	8.3	79	<0
OCT.									
31...	1215	47100	10.0	-1.0	10.8	1.2	8.2	<2	<0
NOV.									
28...	1045	43600	5.8	.2	12.0	1.0	8.5	<0	<0
DEC.									
04...	1300	31000	3.0	.0	13.0	.7	8.6	<0	<0
JAN., 1973									
10...	1050	50000	.0	-16.0	13.2	.6	8.1	<0	<0
FEB.									
27...	1115	47000	1.9	1.7	13.2	1.0	8.5	<0	<0
MAR.									
30...	1030	19000	3.5	9.0	13.8	.6	8.2	<2	<1
APR.									
23...	1300	23500	5.5	19.0	13.8	.7	8.1	<1	<0
MAY									
31...	1200	26000	12.5	24.0	14.4	.8	8.1	<0	<0
JUNE									
26...	1010	42900	16.0	20.5	12.2	.8	8.2	25	13
JULY									
27...	1015	47300	20.0	20.5	9.9	1.2	8.4	12	2
AUG.									
15...	1000	33500	20.0	21.0	9.1	1.0	8.2	100	8
SEP.									
19...	0945	31000	17.0	14.5	8.4	.8	8.6	56	9

06440000 MISSOURI RIVER AT PIERRE, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	710	720	725	720	730	730	740	700	730	740	710	710
2	705	725	715	710	730	730	740	700	730	750	710	690
3	705	725	715	710	740	730	740	700	740	750	710	690
4	705	725	715	710	740	730	750	700	730	750	710	690
5	710	725	715	710	740	720	740	700	730	750	710	690
6	705	725	710	710	740	720	750	700	730	750	710	690
7	700	725	710	730	740	720	740	695	730	750	710	690
8	700	725	710	710	740	720	730	695	740	760	700	690
9	700	720	705	710	740	720	740	695	740	750	700	690
10	700	715	705	710	750	720	730	700	740	750	700	690
11	710	730	720	720	740	730	730	700	730	750	700	690
12	710	730	715	720	740	730	730	710	730	750	710	690
13	710	725	715	720	740	720	730	700	730	750	700	690
14	710	720	715	720	740	730	740	700	730	750	700	690
15	710	730	715	720	740	730	740	700	730	750	700	690
16	705	725	710	720	740	730	740	700	730	750	700	690
17	705	725	710	720	740	730	740	695	730	750	700	690
18	710	725	705	720	740	740	740	690	730	750	710	690
19	705	725	705	720	740	740	740	695	730	750	710	690
20	700	715	700	710	750	740	730	695	730	750	700	690
21	715	725	725	720	750	750	740	700	730	750	700	690
22	715	735	725	720	740	750	740	695	730	750	700	690
23	715	725	725	720	740	740	730	695	730	750	700	690
24	715	725	725	720	740	740	730	690	730	750	700	690
25	720	725	725	720	740	740	730	690	730	750	700	690
26	715	735	720	720	740	740	730	690	730	750	700	690
27	710	725	725	720	740	740	740	690	730	750	700	690
28	715	720	720	720	740	740	730	690	730	750	700	690
29	710	715	715	720	---	730	740	690	730	750	700	690
30	705	715	705	710	---	730	740	690	730	760	700	690
31	710	---	710	710	---	730	---	690	---	760	700	---
AVG	700	724	715	717	740	734	737	696	731	751	703	691

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.5	12.0	4.0	1.0	2.0	2.0	4.0	6.0	13.0	18.0	21.0	19.0
2	17.5	10.0	4.0	1.0	2.0	2.0	4.0	6.0	12.0	17.0	21.0	21.0
3	17.5	11.0	4.0	0.0	2.0	3.0	4.0	6.0	13.0	17.0	22.0	21.0
4	17.5	10.0	4.0	0.0	3.0	2.0	4.0	8.0	13.0	17.0	21.0	21.0
5	15.0	10.0	3.0	1.0	2.0	2.0	4.0	8.0	13.0	18.0	20.0	22.0
6	16.0	9.0	3.0	0.0	1.0	2.0	4.0	8.0	13.0	18.0	21.0	21.0
7	17.0	9.0	4.0	0.0	1.0	3.0	3.0	7.0	13.0	18.0	21.0	19.0
8	16.0	9.0	3.0	0.0	2.0	3.0	3.0	8.0	13.0	18.0	22.0	18.0
9	16.0	9.0	3.0	0.0	2.0	3.0	4.0	9.0	14.0	18.0	21.0	18.0
10	17.0	9.0	4.0	1.0	1.0	3.0	4.0	9.0	14.0	17.0	22.0	20.0
11	15.0	8.0	3.0	1.0	1.0	3.0	5.0	9.0	14.0	17.0	22.0	21.0
12	15.5	7.0	3.0	2.0	1.0	3.0	5.0	9.0	14.0	16.0	21.0	19.0
13	15.0	8.0	3.0	2.0	1.0	3.0	6.0	10.0	15.0	18.0	22.0	20.0
14	15.0	6.0	3.0	2.0	1.0	2.0	5.0	9.0	13.0	18.0	21.0	19.0
15	15.0	7.0	2.0	2.0	1.0	3.0	6.0	10.0	13.0	19.0	21.0	17.0
16	15.0	8.0	2.0	2.0	1.0	3.0	4.0	9.0	13.0	19.0	20.0	17.0
17	13.5	7.0	3.0	2.0	2.0	3.0	6.0	9.0	13.0	17.0	20.0	19.0
18	13.0	8.0	3.0	1.0	3.0	3.0	7.0	11.0	15.0	17.0	21.0	19.0
19	13.0	8.0	3.0	1.0	2.0	4.0	6.0	11.0	16.0	19.0	22.0	18.0
20	13.0	8.0	3.0	1.0	2.0	3.0	6.0	13.0	16.0	19.0	22.0	18.0
21	13.0	7.0	3.0	1.0	2.0	3.0	5.0	11.0	17.0	20.0	21.0	18.0
22	12.5	6.0	3.0	1.0	2.0	3.0	7.0	11.0	16.0	20.0	21.0	18.0
23	12.5	7.0	3.0	2.0	2.0	3.0	6.0	11.0	16.0	17.0	21.0	17.0
24	13.0	7.0	2.0	2.0	2.0	3.0	6.0	12.0	15.0	19.0	20.0	17.0
25	13.5	6.0	2.0	1.0	1.0	4.0	6.0	12.0	16.0	21.0	21.0	17.0
26	14.0	7.0	3.0	2.0	2.0	4.0	6.0	10.0	17.0	21.0	21.0	18.0
27	12.0	6.0	2.0	1.0	2.0	4.0	6.0	10.0	17.0	21.0	21.0	18.0
28	10.5	6.0	2.0	0.0	2.0	4.0	6.0	12.0	17.0	21.0	22.0	17.0
29	11.5	7.0	2.0	1.0	---	4.0	6.0	12.0	17.0	21.0	22.0	18.0
30	11.0	7.0	1.0	1.0	---	3.0	6.0	12.0	17.0	21.0	22.0	17.0
31	11.0	---	1.0	2.0	---	3.0	---	13.0	---	22.0	21.0	---
AVG	14.5	8.0	3.0	1.0	1.5	3.0	5.0	9.5	14.5	18.5	21.0	18.5

06441500 BAD RIVER NEAR FORT PIERRE, S. DAK.

LOCATION.--Lat 44°19'36", long 100°23'02", in NW¼NW¼ sec.10, T.4 N., R.31 E., Stanley County, at gaging station, on right bank at downstream side of highway bridge, 2.1 mi (3.4 km) south of Fort Pierre, 4.3 mi (6.9 km) downstream from Willow Creek, and 6.0 mi (9.7 km) upstream from mouth.

DRAINAGE AREA.--3,107 mi² (8,047 km²).

PERIOD OF RECORD.--Sediment records: October 1971 to September 1973.

EXTREMES.--1972-73:
Sediment concentrations: Maximum daily, 43,500 mg/l Mar. 15, minimum daily, no flow for many days.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1		0			0			0	
2		0			0			0	
3		0			0			0	
4		0			0			0	
5		0			0			0	
6		0			0			0	
7		0			0			0	
8		0			0			0	
9		0			0			0	
10		0			0			0	
11		0			0			0	
12		0			0			0	
13		0			0			0	
14		0			0			0	
15		0			0			0	
16		0			0			0	
17		0			0			0	
18		0			0			0	
19		0			0			0	
20		0			0			0	
21		0			0			0	
22		0			0			0	
23		0			0			0	
24		0			0			0	
25		0			0			0	
26		0			0			0	
27		0			0			0	
28		0			0			0	
29		0			0			0	
30		0			0			0	
31		0			--			0	
TOTAL	0	--	0	0	--	0	0	--	0

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TYPE	TIME	INSTAN-TANEOUS DIS-CHARGE (CFS) 00061	TEMPER-ATURE (DEG C) 00010	SUS-PENDED SEDI-MENT (MG/L) 80154	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) 80155	SUS. SED. FALL DIAM. % FINER THAN .002 MM 70337	SUS. SED. FALL DIAM. % FINER THAN .004 MM 70338	SUS. SED. FALL DIAM. % FINER THAN .016 MM 70340	SUS. SED. FALL DIAM. % FINER THAN .062 MM 70342	SUS. SED. FALL DIAM. % FINER THAN .125 MM 70343	SUS. SED. FALL DIAM. % FINER THAN .250 MM 70344
MAR.												
14...	2	1745	209	3.5	45200	25500	73	84	96	100	--	--
27...	2	1830	162	10.5	23600	10300	84	91	98	100	--	--
APR.												
23...	2	1845	374	19.5	24400	24600	63	72	87	97	100	--
24...	2	1800	330	10.5	29600	26400	67	81	98	99	100	--
MAY												
27...	2	2130	728	14.0	76800	151000	68	78	95	99	100	--
31...	2	1000	1740	19.0	22900	117000	56	77	93	98	99	100

06441500 BAD RIVER NEAR FORT PIERRE, S. DAK.--Continued

EXTREMES.--1972-73:--Continued
Sediment discharge: Maximum daily, 300,000 tons May 28; minimum daily, 0 tons on many days during year.

Period of record:
Sediment concentrations: Maximum daily, 41,900 mg/l May 28, 1973; minimum daily, no flow for many days each year.
Sediment discharge: Maximum daily, 783,000 tons May 2, 1972; minimum daily, 0 tons on many days each year.

REMARKS.--Records fair. No flow Oct. 1 to Jan. 15, June 26 to Aug. 15, Aug. 26 to Sept. 30. Sediment-discharge records prior to Oct. 1, 1971, on file in the District office, Corps of Engineers, Omaha, Nebr. Miscellaneous samples for chemical data published for water years 1946-53.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	JANUARY			FEBRUARY			MARCH		
	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	0	0	0	45	550	67	160	8400	3630
2	0	0	0	45	500	61	120	8800	2850
3	0	0	0	50	450	61	100	7000	1890
4	0	0	0	45	435	53	80	5400	1170
5	0	0	0	25	430	29	58	4200	658
6	0	0	0	15	410	17	69	3200	596
7	0	0	0	15	400	16	59	2300	366
8	0	0	0	20	380	21	43	1600	186
9	0	0	0	20	360	19	35	900	85
10	0	0	0	25	340	23	30	600	49
11	0	0	0	25	320	22	25	424	29
12	0	0	0	20	310	17	21	400	23
13	0	0	0	15	300	12	18	400	19
14	0	0	0	10	280	7.6	170	28500	13100
15	0	0	0	10	260	7.0	242	43500	28400
16	1.0	1600	4.3	10	240	6.5	133	18000	6460
17	290	8000	6260	15	220	8.9	78	7500	1580
18	400	5900	6370	25	300	20	58	5300	830
19	200	2100	1130	300	8800	7130	45	3900	474
20	80	800	173	500	10400	14000	67	3200	579
21	50	320	43	450	8300	10100	64	1500	259
22	25	400	27	350	7200	6800	73	1650	325
23	17	500	23	300	7000	5670	68	740	136
24	30	560	45	200	6600	3560	64	3000	518
25	50	500	68	150	4600	1860	252	41000	27900
26	45	600	73	130	3000	1050	216	29000	16900
27	35	800	76	150	4000	1620	187	28000	14100
28	35	1000	95	180	6200	3010	132	14000	4990
29	35	800	76	--	--	--	220	25000	14900
30	40	650	70	--	--	--	133	28500	10200
31	40	600	65	--	--	--	86	17000	3950
TOTAL	1373.0	--	14598.3	3145	--	55268.0	3106	--	157152

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTMEBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	NUMBER OF SAMPLING POINTS (00063)	INSTANTANEOUS DISCHARGE (CFS) (00061)	BFD MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
MAR.							
03...	1315	1.5	1	100	2	4	8
21...	1645	11.0	1	68	5	7	9
MAY							
03...	0900	8.5	1	20	3	4	8

06441500 BAD RIVER NEAR FORT PIERRE, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	65	5000	878	30	920	75	571	10500	16200
2	50	5050	682	24	590	38	277	8200	6130
3	39	3850	405	19	380	19	205	8400	4650
4	31	2150	180	16	370	16	131	4000	1410
5	24	750	49	40	1550	167	91	1500	369
6	20	385	21	88	3450	820	65	600	105
7	17	342	16	62	2400	402	50	285	38
8	13	247	8.7	45	900	109	40	213	23
9	9.8	263	7.0	33	500	45	31	195	16
10	7.5	270	5.5	24	570	37	25	181	12
11	6.2	278	4.7	18	350	17	20	173	9.3
12	4.6	245	3.0	13	210	7.4	15	169	6.8
13	4.1	244	2.7	10	170	4.6	12	175	5.7
14	3.6	225	2.2	8.3	170	3.8	9.2	186	4.6
15	3.3	205	1.8	7.1	127	2.4	7.1	171	3.3
16	3.0	188	1.5	4.9	162	2.1	5.3	150	2.1
17	2.5	239	1.6	4.1	133	1.5	4.1	130	1.4
18	1.9	268	1.4	3.3	133	1.2	4.1	230	2.5
19	2.2	300	1.8	3.3	154	1.4	3.0	270	2.2
20	6.6	370	6.6	2.2	176	1.0	2.7	180	1.3
21	18	870	42	1.7	230	1.1	1.9	140	.72
22	9.2	700	17	1.2	184	.60	1.2	140	.45
23	141	11800	16400	.76	179	.37	1.1	120	.36
24	389	39500	44300	.60	182	.29	.42	90	.10
25	205	18000	9960	.54	185	.27	.18	50	.02
26	130	8800	3090	.85	185	.42	0	0	0
27	87	6500	1530	322	41500	62500	0	0	0
28	59	4300	685	735	41900	300000	0	0	0
29	40	2500	270	167	18000	8120	0	0	0
30	31	1650	138	811	17500	38300	0	0	0
31	--	--	--	1580	23500	100000	--	--	--
TOTAL	1423.5	--	78711.5	4075.85	--	510693.45	1573.30	--	28993.85

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
MAR.							
03...	28	56	69	83	96	99	100
21...	17	25	28	33	44	68	100
MAY							
03...	28	53	60	67	80	100	--

06441500 BAD RIVER NEAR FORT PIERRE, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1		0		0	0	0		0	
2		0		0	0	0		0	
3		0		0	0	0		0	
4		0		0	0	0		0	
5		0		0	0	0		0	
6		0		0	0	0		0	
7		0		0	0	0		0	
8		0		0	0	0		0	
9		0		0	0	0		0	
10		0		0	0	0		0	
11		0		0	0	0		0	
12		0		0	0	0		0	
13		0		0	0	0		0	
14		0		0	0	0		0	
15		0		0	0	0		0	
16		0		46	4100	813		0	
17		0		17	2900	133		0	
18		0		4.9	1400	19		0	
19		0		.60	700	1.1		0	
20		0		.06	200	.03		0	
21		0		0	0	0		0	
22		0		1.5	600	2.4		0	
23		0		7.1	1800	35		0	
24		0		2.5	700	4.7		0	
25		0		.30	250	.20		0	
26		0		.30	0	0		0	
27		0		0	0	0		0	
28		0		0	0	0		0	
29		0		0	0	0		0	
30		0		0	0	0		0	
31		0		0	0	0		--	
TOTAL	0	--	0	80.26	--	1008.43	0	--	0

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) 14776.91
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) 846425.53

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	9.5	13.0	23.5	---	---	---
2	---	---	---	---	---	---	10.0	15.5	23.0	---	---	---
3	---	---	---	---	---	1.5	11.0	19.5	22.5	---	---	---
4	---	---	---	---	0.0	---	12.5	19.5	22.5	---	---	---
5	---	---	---	---	---	---	15.5	15.5	23.0	---	---	---
6	---	---	---	---	---	---	9.0	18.0	26.5	---	---	---
7	---	---	---	---	---	---	5.0	22.0	29.5	---	---	---
8	---	---	---	---	---	---	5.0	23.5	28.0	---	---	---
9	---	---	---	---	---	---	7.5	18.0	30.5	---	---	---
10	---	---	---	---	---	---	---	20.0	20.5	---	---	---
11	---	---	---	---	---	5.0	16.0	18.5	25.5	---	---	---
12	---	---	---	---	---	---	17.0	17.0	21.0	---	---	---
13	---	---	---	---	---	---	20.5	19.0	30.0	---	---	---
14	---	---	---	---	---	3.5	---	22.0	30.5	---	---	---
15	---	---	---	---	---	---	---	25.5	28.0	---	---	---
16	---	---	---	---	---	---	15.0	22.0	---	---	---	---
17	---	---	---	0.5	---	3.0	20.5	25.5	---	---	---	---
18	---	---	---	---	---	---	20.0	27.0	---	---	---	---
19	---	---	---	---	---	---	13.0	27.0	18.5	---	---	---
20	---	---	---	---	---	---	---	23.5	---	---	---	---
21	---	---	---	0.0	---	11.0	---	22.5	---	---	---	---
22	---	---	---	---	1.0	4.0	18.0	26.0	19.0	---	---	---
23	---	---	---	0.0	---	10.0	19.5	24.0	---	---	---	---
24	---	---	---	---	---	8.5	10.5	19.0	28.0	---	---	---
25	---	---	---	---	0.0	8.0	11.5	19.0	---	---	---	---
26	---	---	---	0.0	---	12.5	13.0	14.0	---	---	---	---
27	---	---	---	---	---	10.5	14.0	13.5	---	---	---	---
28	---	---	---	---	---	9.0	17.0	18.5	---	---	---	---
29	---	---	---	---	---	9.0	16.5	20.0	---	---	---	---
30	---	---	---	---	---	10.5	10.5	18.0	---	---	---	---
31	---	---	---	---	---	9.0	---	20.0	---	---	---	---
AVG	---	---	---	---	---	---	13.5	20.0	---	---	---	---

06452000 WHITE RIVER NEAR OACOMA, S. DAK.

LOCATION.--Lat 43°44'54", long 99°33'22", in SE¼SW¼ sec.3, T.103 N., R.73 W., Lyman County, at gaging station, on left bank at downstream side of bridge on State Highway 47, 1.5 mi (2.4 km) downstream from Wagner Draw, 1.8 mi (2.9 km) upstream from high-water line of Lake Francis Case, and 8.8 mi (14.2 km) southwest of Oacoma.

DRAINAGE AREA.--10,200 mi² (26,400 km²), approximately.

PERIOD OF RECORD.--Sediment records: October 1971 to September 1973.

EXTREMES.--1972-73:
Sediment concentrations: Maximum daily, 68,700 mg/l May 29; minimum daily, 81 mg/l July 10.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	32	180	16	69	280	52	100	175	47
2	30	175	14	163	790	348	90	160	39
3	27	170	12	133	590	212	70	150	28
4	25	165	11	108	450	131	40	140	15
5	27	190	14	92	360	89	20	135	7.3
6	36	185	18	86	290	67	10	130	3.5
7	28	182	14	74	240	48	10	125	3.4
8	28	179	14	70	200	38	10	120	3.2
9	27	176	13	72	180	35	10	115	3.1
10	33	173	15	110	390	116	11	110	3.3
11	30	170	14	119	390	125	12	105	3.4
12	27	167	12	140	280	106	12	100	3.2
13	30	164	13	133	220	79	12	100	3.2
14	28	161	12	112	180	54	12	97	3.1
15	22	158	9.4	85	150	34	12	95	3.1
16	23	155	9.6	80	150	32	12	95	3.1
17	23	152	9.4	80	145	31	14	95	3.6
18	22	149	8.9	85	140	32	20	98	5.3
19	28	146	11	90	140	34	20	100	5.4
20	31	143	12	90	135	33	25	100	6.8
21	31	140	12	95	350	90	30	105	8.5
22	46	137	17	100	350	95	38	105	11
23	51	134	18	110	310	92	36	105	10
24	53	131	19	120	290	94	34	110	10
25	55	129	19	120	280	91	36	110	11
26	53	128	18	120	260	84	40	110	12
27	49	125	17	110	240	71	40	115	12
28	48	122	16	95	210	54	38	115	12
29	46	120	15	95	180	46	32	115	9.9
30	62	330	55	100	180	49	30	120	9.7
31	74	390	78	--	--	--	30	120	9.7
TOTAL	1125	--	536.3	3056	--	2462	906	--	308.8

PARTICLE-SIZE DISTRIBUTION OF SUSPENDED SEDIMENT, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)	SUS. SED. FALL DIAM. % FINER THAN .002 MM (70337)	SUS. SED. FALL DIAM. % FINER THAN .004 MM (70338)	SUS. SED. FALL DIAM. % FINER THAN .016 MM (70340)	SUS. SED. FALL DIAM. % FINER THAN .062 MM (70342)	SUS. SED. FALL DIAM. % FINER THAN .125 MM (70343)	SUS. SED. FALL DIAM. % FINER THAN .250 MM (70344)	SUS. SED. FALL DIAM. % FINER THAN .500 MM (70345)
MAR.												
08...	1215	4.5	652	5580	9820	74	85	98	99	100	--	--
22...	1245	4.0	1450	26600	104000	59	72	90	98	99	99	100
29...	1300	5.5	1700	25500	117000	54	62	83	98	99	99	100
APR.												
22...	1915	14.0	1920	24100	125000	5	19	40	92	97	98	100
23...	1815	14.5	2640	55200	367000	45	54	74	97	99	99	100
MAY												
03...	1200	11.5	479	4200	5430	74	86	97	99	99	100	--
31...	1315	24.0	3130	38500	325000	50	61	79	96	99	100	--
JUNE												
11...	1330	21.0	310	410	343	85	94	99	100	--	--	--
JULY												
12...	0900	26.0	148	9660	3860	79	90	99	100	--	--	--
SEP.												
06...	1700	25.0	114	24000	7390	87	96	99	100	--	--	--

06452000 WHITE RIVER NEAR OACOMA, S. DAK.--Continued

EXTREMES.--1972-73:--Continued
Sediment discharge: Maximum daily, 1,220,000 tons May 29; minimum daily, 3.1 tons Dec. 9, 14-16.

Period of record:
Sediment concentrations: Maximum daily, 69,000 mg/l May 2, 1972; minimum daily, 76 mg/l Sept. 12, 1972.
Sediment discharge: Maximum daily, 1,220,000 tons May 29, 1973; minimum daily, 3.0 tons Jan. 26, 1972.

REMARKS.--Records poor. Flow affected by ice Nov. 15 to Mar. 2. Sediment-discharge records prior to Oct. 1, 1971, on file in District office, Corps of Engineers, Omaha, Nebr. Miscellaneous samples for chemical data published for water years 1946-53, 1969.

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	32	120	10	110	180	53	1600	3100	13400
2	33	120	11	120	170	55	1700	9500	43600
3	30	125	10	120	160	52	1090	11000	32400
4	26	125	8.8	110	150	45	936	9700	24500
5	26	125	8.8	95	150	38	1230	9700	32200
6	26	130	9.1	95	145	37	960	8000	20700
7	24	130	8.4	90	140	34	747	6500	13100
8	24	130	8.4	90	135	33	636	5600	9620
9	23	135	8.4	90	130	32	557	4400	6620
10	23	135	8.4	95	125	32	510	3500	4820
11	24	140	9.1	100	120	32	485	2800	3670
12	25	140	9.5	110	115	34	475	2300	2950
13	30	143	12	110	110	33	455	2000	2460
14	50	145	20	110	105	31	606	7300	11900
15	100	200	54	100	97	26	584	4900	7730
16	130	300	105	90	100	24	1750	14500	145000
17	140	350	132	95	100	26	2350	38200	242000
18	140	330	125	100	100	27	1500	30800	125000
19	130	280	98	200	800	432	1160	26400	82700
20	110	250	74	400	1400	1510	984	22800	60600
21	100	200	54	750	3400	6890	1140	23100	71100
22	110	180	53	1000	2000	5400	1500	27400	111000
23	120	160	52	1200	2200	7130	1160	21300	66700
24	110	130	39	1000	2000	5400	1130	16700	51000
25	110	110	33	950	1100	2820	1020	12200	33600
26	100	100	27	900	1200	2920	1270	12000	41100
27	95	150	38	950	1700	4360	1590	16000	89300
28	95	250	64	1000	3400	9180	2990	37600	304000
29	95	230	59	--	--	--	1710	25700	119000
30	100	200	54	--	--	--	1210	21500	70200
31	100	180	49	--	--	--	904	19200	46900
TOTAL	2281	--	1251.9	10180	--	46686	35939	--	1888870

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	NUMBER OF SAM-PLING POINTS (00063)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	BED MAT. FALL DIAM. % FINER THAN .062 MM (80158)	BED MAT. FALL DIAM. % FINER THAN .125 MM (80159)	BED MAT. FALL DIAM. % FINER THAN .250 MM (80160)
MAR.							
22...	1245	4.0	3	1450	76	77	79
29...	1300	5.5	1	1700	0	1	14
APR.							
19...	1315	14.5	3	26	3	5	19
MAY							
14...	1445	14.5	1	425	1	3	11
31...	1315	24.0	3	3130	3	5	46
JUNE							
11...	1330	21.0	3	310	3	3	51
JULY							
12...	0900	26.0	2	148	--	0	18
AUG.							
08...	1345	24.0	1	22	--	0	1
SEP.							
06...	1700	25.0	1	114	--	0	2

06452000 WHITE RIVER NEAR OACOMA, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	761	15000	30800	624	9000	15200	1810	31000	151000
2	692	11600	21700	505	6000	8180	1230	22000	73100
3	659	9000	16000	470	4800	6090	920	16400	40700
4	521	6250	8790	972	22000	80600	678	13100	24000
5	490	4920	6510	1520	33000	135000	536	10700	15500
6	475	3950	5070	1090	25500	75000	445	8700	10500
7	445	2750	3300	798	21500	46300	389	7300	7670
8	412	2900	3230	641	17300	29900	346	6200	5790
9	376	2900	2940	547	14700	21700	346	6700	6260
10	362	2370	2320	480	11800	15300	354	7800	7460
11	325	1870	1640	436	8500	10000	302	4200	3420
12	302	1400	1140	490	8500	11200	266	2950	2120
13	284	1120	859	445	6900	8290	246	1850	1230
14	270	1050	765	416	5000	5620	234	1210	764
15	277	1030	770	380	3600	3690	231	1100	686
16	277	1100	823	342	2800	2590	204	1050	578
17	277	2400	1790	317	2400	2050	190	980	503
18	253	1770	1210	371	5000	5010	212	900	515
19	260	1000	702	371	4350	4360	187	850	429
20	273	1520	1120	317	3000	2570	171	800	369
21	277	1050	785	280	2200	1660	174	750	352
22	841	12500	106000	256	1450	1000	160	700	302
23	3160	63500	542000	243	1200	787	158	650	277
24	1600	45000	194000	237	1100	704	133	600	215
25	1180	36500	116000	227	1000	613	121	550	180
26	944	28000	71400	253	1200	820	112	500	151
27	725	19000	37200	398	2800	3010	90	450	109
28	595	16500	26500	706	5000	9530	80	400	86
29	521	13500	19000	6490	68700	1220000	68	350	64
30	542	10000	14600	4530	50000	612000	84	319	72
31	--	--	--	3070	39000	323000	--	--	--
TOTAL	18376	--	1238964	28222	--	2661774	10477	--	354402

PARTICLE-SIZE DISTRIBUTION OF SURFACE BED MATERIAL, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	BED MAT. FALL DIAM. % FINER THAN .500 MM (80161)	BED MAT. FALL DIAM. % FINER THAN 1.00 MM (80162)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
MAR.						
22...	88	93	95	96	99	100
29...	75	94	94	97	99	100
APR.						
19...	60	84	92	96	99	100
MAY						
14...	56	87	92	95	98	100
31...	84	97	99	99	100	--
JUNE						
11...	95	99	99	100	--	--
JULY						
12...	94	100	--	--	--	--
AUG.						
08...	40	83	93	98	99	100
SEP.						
06...	68	96	97	99	99	100

06452000 WHITE RIVER NEAR OACOMA, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	76	295	61	207	21000	11700	4.7	340	4.3
2	61	270	44	171	20500	9460	21	500	28
3	46	250	31	201	19000	10300	17	4500	207
4	36	225	22	140	17000	6430	39	12500	1320
5	26	200	14	103	16300	4530	88	28000	6650
6	20	175	9.5	59	15500	2470	101	25000	6820
7	17	150	6.9	34	15000	1380	218	25500	15000
8	16	125	5.4	21	14000	794	393	50500	53600
9	19	100	5.1	19	10800	554	317	53000	45400
10	17	81	3.7	13	7900	277	246	44000	29200
11	141	11500	4380	14	6000	227	190	35000	18000
12	143	10000	3860	36	7400	719	160	29500	12700
13	186	10400	9070	25	4900	331	133	25500	9160
14	516	65000	90600	18	3800	185	105	21500	6100
15	407	50000	54900	18	3300	160	145	20800	8140
16	306	42000	34700	14	3050	115	133	17800	6390
17	227	36500	22400	14	2720	103	138	15600	5810
18	158	32000	13700	8.6	2400	56	133	14200	5100
19	130	27500	9650	5.1	2100	29	184	16500	8200
20	108	23500	6850	7.5	1820	37	284	22000	17500
21	96	20500	5310	8.0	1520	33	354	19200	18400
22	84	17500	3970	11	1280	38	299	16400	13200
23	108	15000	4370	17	1100	50	234	14800	9350
24	133	10200	3660	15	980	40	209	13900	7840
25	164	10000	5730	11	760	23	193	13400	6980
26	485	51500	67400	8.0	590	13	207	13000	7270
27	338	36000	32900	4.3	510	5.9	182	12700	6240
28	266	29500	21200	2.8	460	3.5	543	44000	64500
29	221	26000	15500	4.3	430	5.0	685	40000	74000
30	201	24000	13000	8.6	400	9.3	460	35000	43500
31	204	22200	12200	8.0	370	8.0	--	--	--
TOTAL	4952	--	435442.6	1226.2	--	50085.7	6415.7	--	506609.3

TOTAL DISCHARGE FOR YEAR (CFS-DAYS) 123155.9
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS) 7187302.6

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	7.0	9.5	---	---	---	---
2	---	---	---	---	---	---	5.5	12.5	---	---	18.5	---
3	---	---	---	---	---	---	8.5	16.0	---	---	---	---
4	---	---	---	---	---	---	10.0	---	---	---	---	---
5	12.0	---	---	---	---	---	9.0	18.0	---	---	---	---
6	---	6.0	---	---	---	---	10.0	---	---	---	---	23.5
7	---	---	---	---	---	---	5.5	18.5	---	---	18.0	---
8	---	---	---	---	---	3.0	6.0	---	---	---	24.0	---
9	---	---	---	---	---	---	4.5	16.5	---	---	---	---
10	---	---	---	---	---	---	8.0	17.0	---	31.5	---	17.0
11	---	---	---	0.0	---	---	13.0	---	21.0	---	---	---
12	---	---	---	---	---	---	13.0	---	17.0	20.0	---	15.5
13	---	---	---	---	---	---	16.0	---	18.5	---	---	---
14	---	---	0.0	---	---	---	---	14.5	21.0	18.0	---	13.0
15	---	---	---	---	0.0	---	7.0	---	20.0	23.0	---	---
16	---	0.0	---	---	---	---	12.5	---	20.0	---	---	---
17	---	---	---	---	---	---	16.0	---	---	---	---	---
18	---	---	---	---	---	---	18.0	---	---	19.0	---	---
19	---	---	---	---	---	---	13.0	17.0	---	---	---	---
20	---	---	---	---	---	---	13.0	21.0	---	---	---	---
21	---	---	---	---	---	---	8.0	23.0	---	17.5	---	---
22	---	---	---	---	---	8.0	14.0	---	---	---	---	---
23	---	---	---	---	---	7.0	14.5	---	---	23.5	---	---
24	---	---	---	---	---	7.5	10.0	---	---	---	---	---
25	---	---	---	---	---	6.5	10.5	---	---	19.5	---	---
26	9.0	---	---	---	---	---	10.5	---	---	---	---	---
27	---	---	---	---	---	7.0	11.0	---	---	---	---	---
28	---	---	---	---	---	6.0	12.0	---	---	19.0	---	---
29	---	---	---	---	---	5.5	14.5	17.5	---	---	---	---
30	---	---	---	---	---	8.0	---	23.0	19.0	---	---	---
31	---	---	---	---	---	7.0	---	24.0	---	---	---	---
AVG	---	---	---	---	---	---	10.5	---	---	---	---	---

06467500 MISSOURI RIVER AT YANKTON, S. DAK.

LOCATION.--Lat 42°51'58", long 97°23'37", in SW¼SW¼ sec.18, T.93 N., R.55 W., Yankton County, at gaging station, near left bank in downstream end of left pier of Meridian Highwmy Bridge on U.S. Highway 81, 5.2 mi (8.4 km) downstream from Gavins Point Dam, 6.0 mi (9.7 km) upstream from James River, and at mile 805.8 (1,296.5 km).

CHEMICAL ANALYSES, AUGUST 1972 TO OCTOBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) .00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
AUG., 1972											
23...	1315	48600	60	22	67	5.0	191	0	220	11	.6
SEP.											
28...	1130	49500	59	21	65	4.9	187	0	210	9.9	.6
OCT.											
27...	0835	50400	56	21	61	5.4	179	0	200	8.7	.6
NOV.											
21...	0950	46100	56	20	65	5.3	182	0	200	8.8	.6
JAN., 1973											
31...	1145	21000	58	20	62	5.5	185	0	190	9.6	.5
FEB.											
22...	0915	19700	57	21	64	5.2	197	0	210	9.9	.6
MAR.											
29...	0900	18700	62	21	58	5.9	193	0	200	9.6	.4
APR.											
26...	0930	28900	60	21	59	6.0	185	0	200	9.2	.5
MAY											
23...	1050	30000	61	20	63	5.2	183	1	210	10	.6
JUNE											
26...	0945	29800	57	20	63	6.0	178	0	210	9.3	.5
AUG.											
01...	1245	30000	59	20	70	5.9	184	0	220	10	.5
22...	1230	32800	58	21	69	5.7	178	6	220	10	.4
SEP.											
19...	1210	31400	59	21	67	5.2	196	4	200	9.6	.4

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972											
23...	1315	48600	.11	.01	.03	--	.23	.26	.38	.00	.03
SEP.											
28...	1130	49500	.18	.00	.03	--	.29	.32	.50	.00	.05
OCT.											
27...	0835	50400	1.7	.00	.04	--	.28	.32	2.0	.00	.03
NOV.											
21...	0950	46100	.13	.00	.01	--	.25	.26	.39	.01	.03
JAN., 1973											
31...	1145	21000	.26	.01	.09	.09	.34	.43	.70	.03	.05
FEB.											
22...	0915	19700	.28	.01	--	.04	.31	.35	.70	.02	.03
MAR.											
29...	0900	18700	.35	.01	--	.07	.45	.52	.85	.02	.08
APR.											
26...	0930	28900	.25	.00	--	.03	.42	.45	.71	.01	.03
MAY											
23...	1050	30000	.13	.00	--	.02	.34	.36	.48	.00	.02
JUNE											
26...	0945	29800	.03	.00	--	.04	.38	.42	.45	.01	.04
AUG.											
01...	1245	30000	.03	.00	--	.04	.38	.42	.48	.00	.06
22...	1230	32800	.09	.01	--	.17	.64	.81	1.0	.02	.03
SEP.											
19...	1210	31400	.05	.01	--	.05	.23	.28	.33	.02	.03

06467500 MISSOURI RIVER AT YANKTON, S. DAK.--Continued

DRAINAGE AREA.--279,500 mi² (723,900 km²), approximately.

PERIOD OF RECORD.--July 1969 to September 1973 (discontinued).

CHEMICAL ANALYSES, AUGUST 1972 TO OCTOBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
AUG., 1972											
23...	.12	--	514	.70	67400	240	84	1.9	755	8.2	24.0
SEP.											
20...	.10	--	458	.62	61200	230	80	1.9	726	8.0	16.0
OCT.											
27...	1.7	--	478	.65	65000	230	79	1.8	702	7.5	10.0
NOV.											
21...	.13	--	510	.69	63500	220	73	1.9	696	8.1	3.5
JAN., 1973											
31...	.27	--	486	.66	27600	230	75	1.8	686	8.1	.0
FEB.											
22...	.29	--	470	.64	25000	230	67	1.8	717	8.1	1.5
MAR.											
29...	.36	--	502	.68	25300	240	83	1.6	743	8.1	6.0
APR.											
26...	.25	--	476	.65	37100	240	85	1.7	737	8.2	12.0
MAY											
23...	.13	--	496	.67	40200	230	83	1.8	726	8.4	17.0
JUNE											
26...	.03	--	471	.64	37900	220	79	1.8	711	8.2	23.0
AUG.											
01...	.03	--	490	.67	39700	230	79	2.0	733	8.1	24.0
22...	.10	--	488	.66	43200	230	75	2.0	752	8.4	25.5
SEP.											
19...	.04	--	501	.68	42500	230	66	1.9	718	8.4	18.0

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972									
23...	1315	48600	24.0	23.6	10.0	1.0	8.5	100	28
SEP.									
20...	1130	49500	16.0	15.0	9.8	1.5	8.5	9	16
OCT.									
27...	0835	50400	10.0	9.2	11.0	.4	8.5	31	23
NOV.									
21...	0950	46100	3.5	1.0	12.0	8.0	8.4	4	2
DEC.									
19...	1430	16500	.0	-1.0	13.0	.6	8.0	<0	<0
JAN., 1973									
31...	1145	21000	.0	.0	12.2	1.0	7.9	6	6
FEB.									
22...	0945	19700	1.5	3.9	11.6	.8	8.2	18	20
MAR.									
29...	0900	18700	6.0	3.0	16.4	1.0	8.4	8	8
APR.									
26...	0930	28900	12.0	10.0	8.8	.8	8.9	40	16
MAY									
23...	1050	30000	17.0	19.5	10.4	1.4	8.5	18	5
JUNE									
26...	0945	29800	23.0	21.5	7.4	2.0	8.8	32	11
AUG.									
01...	1245	30000	24.0	25.0	8.3	1.9	8.3	23	17
22...	1230	32800	25.5	34.0	7.2	1.8	8.2	20	9
SEP.									
19...	1210	31400	18.0	20.5	8.3	2.2	8.3	23	13

06471000 JAMES RIVER AT COLUMBIA, S. DAK.

LOCATION.--Lat 45°37'05", long 98°19'30", in NE¼NW¼ sec.29, T.125 N., R.62 W., Brown County, at gaging station, on left bank 10 ft (3 m) downstream from highway bridge, 0.8 mi (1.3 km) northwest of Columbia, 2.4 mi (3.9 km) upstream from Chicago and North Western Transportation Co. bridge, 3.6 mi (5.8 km) upstream from Elm River, and 9.4 mi (15.1 km) downstream from Sand Lake.

DRAINAGE AREA.--7,050 mi^2 (18,300 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: June 1949 to September 1953 (miscellaneous), October 1954 to August 1964 (monthly), October 1966 to September 1973 (daily).
Water temperatures: October 1966 to September 1973.
Prior to October 1957, published as "near Columbia."

EXTREMES.--1972-73:
Water temperatures: Maximum, 31.0°C July 6; minimum, freezing point on many days November to January.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	29	21	72	49	120	22	407	260	54	.5	1.4
NOV. 01-30	--	63	23	81	50	130	17	460	260	52	.4	1.1
DEC. 01-31	--	7.2	30	100	64	160	19	575	340	66	.4	.99
APR. 01-30	--	1.2	7.9	72	48	140	16	405	330	67	.4	.65
MAY 01-10	--	.90	8.4	73	58	140	17	452	270	65	.4	.69
23-31	--	3.5	8.4	73	58	140	17	452	270	65	.4	.69
JUNE 01-30	--	4.3	20	63	50	130	19	441	230	63	.4	.90
JULY 01-31	--	1.4	20	63	49	140	19	456	220	67	.4	.81
WTD. AVG.	--	--	22	79	51	130	19	452	265	56	.4	1.2
TIME WTD. AVG.	--	A 16	20	75	50	137	18	457	273	62	.4	.97
TOT. LOAD (TONS)	--	--	198	694	449	1140	164	3980	2330	481	3.8	10
					ANALYSES OF ADDITIONAL SAMPLES							
OCT. 30...	0930	B 45	25	82	51	120	15	451	280	56	.5	2.1
DEC. 28...	1000	B 6.5	32	110	68	170	21	630	370	73	.6	.88
MAR. 26...	1100	B 1.7	7.4	82	53	120	18	357	320	64	.3	.63
APR. 21...	1315	B 2.3	10	86	66	150	17	427	360	70	.4	.77
MAY 25...	1100	B 4.3	10	69	57	140	17	410	270	60	.6	.62

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/1.
A Mean discharge based on 208 days of chemical analysis; mean discharge based on 365 days, 9.4 cfs.
B Discharge at time of sampling.

06471000 JAMES RIVER AT COLUMBIA, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1966-69, 1970-72): Maximum, 1,190 mg/l Dec. 19-21, 1967; minimum, 282 mg/l Apr. 1-30, 1972.
Hardness (1966-69, 1970-72): Maximum, 503 mg/l Dec. 19-21, 1967; minimum, 160 mg/l Apr. 1-30, 1972.
Specific conductance (1966-72): Maximum daily, 1,860 micromhos Jan. 20, 1972; minimum daily, 240 micromhos Mar. 17, 1972.
Water temperatures (1966-73): Maximum, 32.0°C June 29, July 10, 1970; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 1,160 mg/l Dec. 28; hardness, 550 mg/l Dec. 28; specific conductance, daily, 1,720 micromhos Dec. 22. Minimum observed during water year: Dissolved solids, 799 mg/l June 1-30; hardness, 360 mg/l June 1 to July 30; specific conductance, daily, 515 micromhos Mar. 15. No flow Jan. 4 to Mar. 5, Mar. 17-23, May 17-22, Aug. 11, 12, Aug. 17 to Sept. 30. Prior to October 1966, sampling site was 5.0 mi (8.0 km) upstream.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT., 01-31	.42	.69	390	807	1.10	65.2	380	48	2.7	1180	8.1	--
NOV., 01-30	.21	.21	350	846	1.15	144	410	31	2.8	1260	8.2	--
DEC., 01-31	.23	.23	470	1070	1.46	20.8	510	42	3.1	1530	8.2	--
APR., 01-30	.18	.19	320	897	1.22	2.91	430	95	3.0	1350	8.1	--
MAY 01-16	.40	.41	390	860	1.17	2.09	420	50	3.0	1340	7.7	--
23-31	.40	.41	390	860	1.17	8.13	420	50	3.0	1340	7.7	--
JUNE 01-30	.56	.59	380	799	1.09	9.28	360	1	3.0	1240	7.9	--
JULY 01-31	.83	.89	380	813	1.11	5.07	360	0	3.2	1230	7.9	--
WTD. AVG.	.29	.37	371	849	1.16	--	406	36	2.8	1260	8.1	--
TIME WTD. AVG.	.41	.46	383	871	1.19	--	410	38	3.0	1300	8.0	--
TOT. LOAD (TONS)	2.6	3.3	5	7490	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT., 30...	.16	.25	370	821	1.12	100	410	45	2.6	1250	8.0	--
DEC., 28...	.25	.30	440	1160	1.58	20.3	550	38	3.1	1660	7.8	.0
MAR., 26...	.14	.26	340	846	1.15	3.87	420	130	2.5	1250	7.5	8.0
APR., 21...	.27	--	380	974	1.32	6.05	490	140	3.0	1480	7.7	12.0
MAY 25...	.36	--	390	841	1.14	9.76	410	66	3.0	1320	7.7	14.0

06471000 JAMES RIVER AT COLUMBIA, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1200	1310	1420	1380	---	---	1290	1580	1280	1150	1300	---
2	1210	1280	1420	1480	---	---	1380	1580	1300	1110	1320	---
3	1200	1310	1380	1580	---	---	1310	1370	1280	1220	1310	---
4	1160	1280	1610	---	---	---	1320	1420	1280	1110	1300	---
5	1210	1270	1560	---	---	---	1320	1360	1300	1230	1310	---
6	1080	1260	1600	---	---	515	1330	1220	1280	1280	1300	---
7	1080	1270	1550	---	---	740	1330	1370	1280	1230	1300	---
8	1200	1300	1360	---	---	750	1330	1220	1280	1240	1300	---
9	1100	1250	1430	---	---	630	1290	1220	1280	1260	1300	---
10	1140	1230	1480	---	---	630	1360	1220	1280	1340	1300	---
11	1160	1280	1620	---	---	630	1360	1350	1280	1250	---	---
12	1240	1260	1550	---	---	740	750	1310	1260	1250	---	---
13	1220	1260	1630	---	---	990	910	1310	1270	1290	1350	---
14	1240	1250	1420	---	---	930	1380	1580	1310	1280	1350	---
15	1320	1150	1530	---	---	990	1390	1300	1260	1300	1330	---
16	1300	1330	1640	---	---	1060	1390	1310	1260	1300	1350	---
17	1300	1320	1640	---	---	---	1400	---	1260	1340	---	---
18	1240	1310	1580	---	---	---	1490	---	1260	1320	---	---
19	1340	1230	1500	---	---	---	1490	---	1160	1300	---	---
20	1300	1280	1620	---	---	---	1070	---	1160	1320	---	---
21	1320	1360	1700	---	---	---	1500	---	1180	1290	---	---
22	1300	1340	1720	---	---	---	1500	---	1180	1280	---	---
23	1280	1350	1640	---	---	---	1500	1310	1240	1300	---	---
24	1320	1330	1620	---	---	1240	1530	1290	1230	1300	---	---
25	1280	1340	1620	---	---	1240	1520	1290	1280	1300	---	---
26	1280	1330	1630	---	---	1700	1500	1310	1280	1280	---	---
27	1020	1310	1650	---	---	1240	1500	1310	1240	1300	---	---
28	1300	1320	1660	---	---	940	1600	1570	1320	1320	---	---
29	1300	1200	1600	---	---	1200	1600	1240	1220	1320	---	---
30	1300	1280	1340	---	---	1360	1600	1240	1320	1300	---	---
31	1280	---	1640	---	---	1300	---	1240	---	1320	---	---
AVG	1230	1290	1550	---	---	1050	1370	1340	1260	1270	---	---

06471000 JAMES RIVER AT COLUMBIA, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.0	3.0	0.0	0.0	---	---	6.0	9.0	24.0	25.0	---	---
2	16.0	4.0	0.0	0.5	---	---	7.0	10.0	25.0	25.0	---	---
3	19.0	4.0	0.0	0.0	---	---	6.5	11.0	19.0	27.0	---	---
4	16.0	4.0	0.0	---	---	---	10.0	13.0	17.0	26.0	---	---
5	14.0	3.5	0.0	---	---	---	9.0	15.0	18.0	30.0	---	---
6	10.5	5.0	0.0	---	---	3.0	7.0	14.0	20.0	31.0	---	---
7	12.0	4.0	0.0	---	---	1.5	4.0	21.0	20.0	30.0	---	---
8	11.0	3.5	0.0	---	---	1.0	3.5	22.0	22.0	26.0	---	---
9	14.0	3.0	0.0	---	---	1.0	3.0	19.0	26.0	25.0	---	---
10	15.0	3.0	0.0	---	---	1.5	8.0	16.0	21.0	26.0	---	---
11	11.0	2.5	0.0	---	---	1.0	8.0	17.0	20.0	28.0	---	---
12	13.0	1.0	0.0	---	---	1.5	9.0	15.0	28.0	24.0	---	---
13	15.0	0.0	0.0	---	---	1.5	10.0	14.0	25.0	25.0	---	---
14	8.0	0.0	0.0	---	---	2.0	17.0	16.0	24.0	23.0	---	---
15	6.0	0.0	0.0	---	---	1.5	10.0	20.0	24.0	25.0	---	---
16	8.0	0.5	0.0	---	---	0.5	7.0	15.0	21.0	24.0	---	---
17	5.0	1.0	0.0	---	---	---	13.0	---	22.0	28.0	---	---
18	6.0	0.5	0.0	---	---	---	14.0	---	18.0	23.0	---	---
19	5.0	1.0	0.0	---	---	---	16.0	---	15.0	21.0	---	---
20	4.0	1.0	0.0	---	---	---	14.0	---	19.0	20.0	---	---
21	6.0	1.0	0.0	---	---	---	12.0	---	18.0	24.0	---	---
22	7.0	0.0	0.0	---	---	---	11.0	---	19.0	19.0	---	---
23	4.5	0.0	0.0	---	---	---	12.0	19.0	30.0	23.0	---	---
24	4.0	1.0	0.0	---	---	---	11.0	16.0	24.0	22.0	---	---
25	5.0	0.5	0.0	---	---	---	10.0	14.0	27.0	23.0	---	---
26	6.0	0.5	0.0	---	---	8.0	11.0	12.0	22.0	20.0	---	---
27	6.0	0.0	0.0	---	---	8.0	13.0	14.0	20.0	20.0	---	---
28	5.0	0.0	2.0	---	---	7.0	10.0	21.0	24.0	20.0	---	---
29	4.0	0.0	1.0	---	---	7.0	11.0	19.0	22.0	20.0	---	---
30	4.0	0.0	1.0	---	---	5.0	11.0	25.0	20.0	22.0	---	---
31	1.0	---	0.0	---	---	5.5	---	24.0	---	24.0	---	---
AVG	8.5	1.5	0.0	---	---	3.5	10.0	C 16.5	22.0	24.0	---	---

C Based on 25 days of data.

06476000 JAMES RIVER AT HURON, S. DAK.

LOCATION.--Lat 44°21'49", long 98°11'56", in SW¼SE¼NE¼ sec.6, T.110 N., R.61 W., Beadle County, at gaging station, on right bank 15 ft (5 m) upstream from city dam at Huron, 135 ft (41 m) downstream from Chicago and North Western Transportation Co. bridge, and 165 ft (50 m) upstream from bridge on business loop U.S. Highway 14.

DRAINAGE AREA.--16,800 mi² (43,500 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: April 1950 to September 1951, August 1956 to September 1973.
Water temperatures: August 1956 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 1,170 mg/1 Sept. 1-30; minimum, 433 mg/1 Mar. 1-31.
Hardness: Maximum, 530 mg/1 Jan. 1-31; minimum, 200 mg/1 Mar. 1-31.
Specific conductance: Maximum daily, 1,840 micromhos Jan. 13; minimum daily, 560 micromhos Mar. 14.
Water temperatures: Maximum, 26.0°C July 5-8, Aug. 22; minimum, freezing point on many days during November to March.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	20	25	80	40	88	19	350	240	40	.4	.65
NOV. 01-30	--	51	20	94	50	110	18	382	310	59	.4	.54
DEC. 01-31	--	50	24	100	59	150	19	502	340	82	.5	.46
JAN. 01-31	--	37	25	110	62	160	19	517	350	80	.5	1.0
FEB. 01-28	--	66	21	110	58	150	21	444	350	73	.5	1.9
MAR. 01-31	--	512	10	44	23	64	15	171	150	32	.3	1.9
APR. 01-30	--	113	2.4	64	32	91	16	224	240	52	.3	.45
MAY 01-31	--	27	6.6	83	44	120	15	300	320	69	.4	.55
JUNE 01-30	--	2.9	13	94	50	150	18	347	380	81	.4	.68
JULY 01-31	--	.00	21	93	56	170	21	366	450	93	.4	.91
AUG. 01-31	--	.00	23	78	58	180	23	349	430	100	.5	.79
SEP. 01-30	--	.00	24	93	61	200	24	369	440	120	.5	.38
WTD. AVG.	--	--	12	62	33	88	16	251	212	45	.3	1.4
TIME WTD. AVG.	--	74	18	87	49	136	19	360	333	73	.4	.85
TOT. LOAD (TONS)	--	--	876	4510	2390	6360	1180	18200	15400	3290	25	105

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	MEAN DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
FEB. 26...	1415	A 266	8.1	40	20	48	15	170	140	23	.3	.56
MAR. 30...	1530	A 252	5.8	50	26	76	12	174	210	35	.1	.69
APR. 30...	1510	A 72	2.9	66	37	110	16	269	270	62	.2	.03
MAY 30...	1340	A 6.0	8.0	94	46	130	17	339	330	73	.4	.01
JUNE 25...	1430	A .00	2.1	85	52	150	19	329	390	86	.4	.00
AUG. 02...	1000	A .00	21	92	58	170	15	321	430	100	.5	.00
29...	1500	A .00	25	85	57	180	22	248	400	110	.4	.01

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/1.
A Discharge at time of sampling.

06476000 JAMES RIVER AT HURON, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1956-58, 1959-68, 1970-73): Maximum, 2,180 mg/l Mar. 1-20, 1965; minimum, 147 mg/l Apr. 5-7, 1960.
Hardness (1956-58, 1959-68, 1970-73): Maximum, 963 mg/l Mar. 1-20, 1965; minimum, 63 mg/l Apr. 1-4, 1960.
Specific conductance (1956-70, 1971-73): Maximum daily, 3,170 micromhos Mar. 14, 1965; minimum daily, 176 micromhos Mar. 30, Apr. 2, 1960.
Water temperatures (1956-70, 1971-73): Maximum, 31.0°C June 2, 1968; minimum, freezing point on many days during winter period.

REMARKS.--Daily samples for chemical analysis composited by discharge during periods of flow and by equal volume during no-flow periods. Flow regulated by Arrowwood and Jim Lakes, and by Jamestown reservoir, combined capacity, 246,000 acre-ft (303 hm^3). Regulation by Jamestown reservoir, capacity, 229,470 acre-ft (283 hm^3), 365 mi (587 km) upstream since May 1953. The city of Huron and Armour and Company divert water from the river immediately upstream from the gage. Average daily pumpage was about 5.0 ft^3 (0.142 m^3). No flow May 17-23, June 14-16, June 24 to Sept. 30. Additional samples collected for more comprehensive definition of water quality. Minimum observed during water year: Dissolved solids, 383 mg/l Feb. 26; hardness, 180 mg/l Feb. 26. Records of specific conductance of daily samples prior to Oct. 1, 1964, on file in District office. Miscellaneous samples for chemical data published for water years 1949, 1952.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.34	.34	300	709	.96	35.3	360	77	2.0	1040	8.1	--
NOV. 01-30	.31	.32	340	853	1.16	117	440	130	2.3	1230	8.1	--
DEC. 01-31	.46	.46	450	1030	1.40	139	490	81	2.9	1440	8.2	--
JAN. 01-31	.54	.58	450	1070	1.46	107	530	110	3.0	1560	8.1	--
FEB. 01-28	.67	.69	420	1010	1.37	180	510	150	2.9	1510	8.1	--
MAR. 01-31	.01	.61	190	433	.59	599	200	64	1.9	708	7.4	--
APR. 01-30	.27	.30	250	611	.83	186	290	110	2.3	984	7.9	--
MAY 01-31	.15	.17	330	809	1.10	59.0	390	140	2.7	1260	7.5	--
JUNE 01-30	.30	.32	380	962	1.31	7.53	440	160	3.1	1400	7.9	--
JULY 01-31	.57	.61	440	1090	1.48	.00	460	160	3.4	1540	7.9	--
AUG. 01-31	.69	.69	500	1070	1.46	.00	430	150	3.8	1570	8.2	--
SEP. 01-30	.72	.93	590	1170	1.59	.00	480	150	4.0	1680	8.5	--
WTD. AVG.	.17	.53	256	600	.82	--	288	65	2.2	931	7.6	--
TIME WTD. AVG.	.42	.50	386	901	1.23	--	418	123	2.9	1330	8.0	--
TOT. LOAD (TONS)	12	38	19	43600	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
FEB. 26...	.68	.79	190	383	.52	275	180	43	1.5	603	7.2	.0
MAR. 30...	.33	.40	240	505	.69	344	230	89	2.2	800	7.2	8.0
APR. 30...	.09	.21	290	697	.95	135	320	97	2.7	1100	7.6	10.4
MAY 30...	.12	.23	350	866	1.18	140	420	150	2.7	1320	8.0	21.0
JUNE 25...	.17	.28	40	947	1.29	.00	430	160	3.2	1430	8.3	27.0
AUG. 02...	.53	.90	510	1080	1.47	.00	470	150	3.4	1510	8.7	24.0
29...	.75	.88	530	1070	1.46	.00	450	140	3.7	1620	9.0	27.0

06476000 JAMES RIVER AT HURON, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO [illegible]PTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	955	1120	1330	1560	1480	780	830	1070	1350	1500	1480	1610
2	955	1110	1340	1570	1480	830	840	1080	1360	1500	1540	1600
3	950	1120	1340	1590	1510	860	850	1100	1350	1500	1530	1600
4	950	1120	1390	1600	1480	960	870	1110	1360	1510	1520	1600
5	955	1120	1410	1640	1500	920	900	1120	1360	1520	1530	1610
6	970	1130	1410	1660	1510	860	940	1120	1380	1530	1540	1610
7	950	1140	1400	1680	1570	760	980	1120	1380	1530	1540	1620
8	970	1150	1410	1660	1580	710	1010	1130	1380	1540	1470	1620
9	965	1170	1430	1680	1620	610	1020	1140	1400	1540	1550	1620
10	965	1160	1430	1720	1640	700	1020	1160	1400	1530	1470	1620
11	975	1280	1550	1760	1710	900	1000	1200	1400	1530	1470	1640
12	980	1340	1570	1800	1730	860	990	1250	1400	1530	1480	1640
13	980	1340	1580	1840	1740	660	990	1230	1400	1540	1500	1640
14	1000	1330	1580	1830	1750	560	1000	1250	1420	1550	1500	1640
15	990	1350	1600	1830	1760	580	1000	1260	1420	1550	1460	1640
16	990	1370	1580	1790	1800	600	1000	1260	1430	1550	1470	1640
17	1000	1410	1600	1810	1810	610	1010	1270	1440	1550	1480	1650
18	1030	1400	1610	1580	1800	610	1030	1270	1420	1560	1500	1650
19	1020	1360	1580	1520	1800	620	1040	1280	1420	1560	1500	1650
20	1020	1320	1540	1660	1800	610	1040	1280	1420	1580	1520	1660
21	1050	1350	1620	1550	1760	610	1050	1290	1420	1600	1530	1650
22	1050	1340	1620	1490	1800	630	1050	1320	1430	1600	1540	1650
23	1050	1340	1620	1500	1810	650	1060	1310	1430	1600	1550	1650
24	1060	1320	1620	1600	1700	660	1080	1300	1440	1600	1550	1650
25	1070	1320	1590	1610	1340	670	1090	1310	1440	1580	1550	1650
26	1070	1300	1580	1550	670	700	1080	1320	1450	1600	1560	1650
27	1070	1290	1550	1530	750	720	1080	1310	1460	1600	1560	1650
28	1070	1290	1520	1520	870	780	1090	1310	1470	1580	1570	1650
29	1070	1280	1490	1520	---	800	1100	1310	1480	1560	1560	1650
30	1070	1270	1460	1500	---	820	1120	1320	1490	1540	1600	1650
31	1080	---	1480	1510	---	840	---	1320	---	1560	1600	---
AVG	1010	1270	1510	1650	1560	725	1010	1230	1410	1550	1520	1640

06476000 JAMES RIVER AT HURON, S. DAK.--Continued

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12.0	3.0	0.0	0.0	0.0	0.0	6.0	9.0	17.0	23.0	24.0	23.0
2	12.0	3.0	0.0	0.0	0.0	0.0	6.0	7.0	20.0	23.0	24.0	23.0
3	13.0	2.0	0.0	0.0	0.0	0.0	5.0	9.0	19.0	25.0	24.0	23.0
4	13.0	1.0	0.0	0.0	0.0	0.0	5.0	11.0	20.0	25.0	23.0	23.0
5	14.0	4.0	0.0	0.0	0.0	0.0	6.0	13.0	20.0	26.0	24.0	20.0
6	11.0	5.0	0.0	0.0	0.0	0.0	7.0	15.0	20.0	26.0	24.0	20.0
7	10.0	4.0	0.0	0.0	0.0	1.0	6.0	14.0	21.0	26.0	23.0	20.0
8	11.0	4.0	0.0	0.0	0.0	1.0	5.0	15.0	22.0	26.0	24.0	19.0
9	11.0	4.0	0.0	0.0	0.0	1.0	8.0	16.0	22.0	25.0	23.0	19.0
10	12.0	4.0	0.0	0.0	0.0	1.0	4.0	15.0	23.0	25.0	24.0	19.0
11	12.0	3.0	0.0	0.0	0.0	1.0	4.0	15.0	23.0	25.0	25.0	20.0
12	11.0	2.0	0.0	0.0	0.0	1.0	5.0	14.0	21.0	25.0	24.0	20.0
13	10.0	1.0	0.0	0.0	0.0	2.0	7.0	13.0	23.0	25.0	24.0	18.0
14	11.0	0.0	0.0	0.0	0.0	5.0	10.0	12.0	23.0	25.0	24.0	17.0
15	10.0	0.0	0.0	0.0	0.0	4.0	10.0	12.0	23.0	24.0	24.0	17.0
16	9.0	0.0	0.0	0.0	0.0	3.0	7.0	14.0	24.0	22.0	25.0	17.0
17	8.0	0.0	0.0	0.0	0.0	3.0	9.0	13.0	22.0	23.0	25.0	13.0
18	7.0	1.0	0.0	0.0	0.0	3.0	11.0	15.0	22.0	23.0	25.0	12.0
19	5.0	1.0	0.0	0.0	0.0	3.0	13.0	18.0	20.0	24.0	24.0	13.0
20	5.0	2.0	0.0	0.0	0.0	4.0	11.0	20.0	19.0	24.0	25.0	14.0
21	6.0	2.0	0.0	0.0	0.0	4.0	12.0	20.0	19.0	23.0	24.0	14.0
22	5.0	0.0	0.0	0.0	0.0	5.0	10.0	18.0	20.0	23.0	26.0	14.0
23	6.0	0.0	0.0	0.0	0.0	5.0	12.0	20.0	20.0	22.0	23.0	14.0
24	6.0	1.0	0.0	0.0	0.0	5.0	12.0	19.0	23.0	21.0	23.0	17.0
25	5.0	2.0	0.0	0.0	0.0	5.0	10.0	15.0	23.0	21.0	23.0	16.0
26	6.0	1.0	0.0	0.0	0.0	5.0	10.0	17.0	24.0	21.0	23.0	16.0
27	6.0	1.0	0.0	0.0	0.0	7.0	9.0	15.0	23.0	23.0	23.0	16.0
28	5.0	0.0	0.0	0.0	0.0	7.0	10.0	14.0	22.0	23.0	25.0	15.0
29	5.0	0.0	0.0	0.0	---	5.0	11.0	15.0	22.0	24.0	24.0	16.0
30	5.0	0.0	0.0	0.0	---	5.0	11.0	17.0	23.0	23.0	24.0	16.0
31	4.0	---	0.0	0.0	---	6.0	---	17.0	---	23.0	24.0	---
AVG	8.5	1.5	0.0	0.0	0.0	3.0	8.5	14.5	21.5	24.0	24.0	17.5

06476050 JAMES RIVER AT 21ST STREET BRIDGE, AT HURON, S. DAK.

LOCATION.--Lat 44°20'29", long 98°11'28", in NW¼NE¼NW¼NW¼ sec.17, T.110 N., R.61 W., Beadle County, at 21st Street bridge 0.5 mi (0.8 km) east of Huron and 2.0 mi (3.2 km) downstream from gaging station.

DRAINAGE AREA.--16,800 mi² (43,500 km²), approximately (at gaging station).

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS- CHARGE (CFS) (00060)	DIS- SOLVED CAL- CIUM (CA) (MG/L) (00915)	DIS- SOLVED MAG- NE- SIUM (MG) (MG/L) (00925)	DIS- SOLVED SODIUM (NA) (MG/L) (00930)	DIS- SOLVED PO- TAS- SIUM (K) (MG/L) (00935)	BICAR- BONATE (HCO3) (MG/L) (00440)	CAR- BONATE (CO3) (MG/L) (00445)	DIS- SOLVED SULFATE (SO4) (MG/L) (00945)	DIS- SOLVED CHLO- RIDE (CL) (MG/L) (00940)	DIS- SOLVED FLUO- RIDE (F) (MG/L) (00950)
AUG., 1972											
30...	1330	95	68	36	71	16	259	0	240	27	.3
SEP.											
28...	1010	40	76	38	85	18	322	0	230	39	.4
OCT.											
30...	1400	24	90	51	200	20	335	0	380	180	1.0
NOV.											
16...	1355	59	100	52	120	16	368	0	340	59	.4
DEC.											
15...	1355	49	110	57	170	20	529	0	320	89	.5
JAN., 1973											
26...	1430	34	120	66	170	21	515	0	410	96	.5
FEB.											
26...	1330	266	45	23	58	15	189	0	170	27	.3
MAR.											
30...	1500	252	50	26	79	12	185	0	210	36	.1
APR.											
30...	1535	72	71	38	110	16	271	0	280	66	.3
MAY											
30...	1520	6.0	94	49	130	15	328	0	340	79	.5
JUNE											
25...	1400	.00	98	62	330	27	365	0	520	330	1.3
AUG.											
02...	1030	.00	90	80	310	20	328	0	560	310	.9
29...	1520	.00	82	70	270	24	216	41	500	270	.6

DATE	TIME	DIS- SOLVED NITRATE (N) (MG/L) (00618)	DIS- SOLVED NITRITE (N) (MG/L) (00613)	DIS- SOLVED AMMONIA NITRO- GEN (N) (MG/L) (00608)	AMMONIA NITRO- GEN (N) (MG/L) (00610)	ORGANIC NITRO- GEN (N) (MG/L) (00605)	TOTAL KJEL- DAHL NITRO- GEN (N) (MG/L) (00625)	TOTAL NITRO- GEN (N) (MG/L) (00600)	DIS- SOLVED ORTHO. PHOS- PHORUS (P) (MG/L) (00671)	DIS- SOL- VED- PHOS- PHORUS (P) (MG/L) (00666)	TOTAL PHOS- PHORUS (P) (MG/L) (00665)
AUG., 1972											
30...	1330	.00	.00	.24	--	1.4	1.6	1.6	.12	--	.35
SEP.											
28...	1010	.00	.00	.12	--	1.4	1.5	1.5	.23	--	.41
OCT.											
30...	1400	.19	.02	2.9	--	.70	3.6	3.8	1.8	--	2.1
NOV.											
16...	1355	.01	.00	.08	--	1.4	1.5	1.5	.21	--	.33
DEC.											
15...	1355	.18	.00	.19	.19	1.3	1.5	1.7	.34	--	.60
JAN., 1973											
26...	1430	.23	.01	1.0	1.0	1.7	2.7	2.9	.59	--	.88
FEB.											
26...	1330	.51	.03	--	.78	2.0	2.8	3.5	.51	--	.74
MAR.											
30...	1500	.01	.01	--	.21	1.8	2.0	2.0	.15	--	.38
APR.											
30...	1535	.00	.00	--	.07	1.3	1.4	1.4	.07	--	.26
MAY											
30...	1520	.04	.01	--	.72	.98	1.7	1.8	.10	--	.82
JUNE											
25...	1400	1.1	.15	--	4.7	4.9	9.6	9.8	2.3	--	4.7
AUG.											
02...	1030	.00	.00	--	.38	9.1	9.5	9.5	.62	--	1.7
29...	1520	.10	.00	--	.72	5.1	5.8	5.8	.26	.33	1.3

06476050 JAMES RIVER AT 21ST STREET BRIDGE, AT HURON, S. DAK.--Continued

PERIOD OF RECORD.--Chemical analyses: August 1972 to September 1973 (discontinued).

REMARKS.--No appreciable inflow between sampling point and gaging station except during periods of intense local rainfall.

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
AUG., 1972											
30...	.00	--	672	.91	172	320	110	1.7	925	8.1	25.0
SEP.											
28...	.00	--	792	1.08	85.5	350	82	1.9	1000	8.3	13.2
OCT.											
30...	.21	--	1140	1.55	73.9	430	160	4.2	1690	8.2	4.4
NOV.											
16...	.01	--	960	1.31	153	460	160	2.4	1280	8.0	.8
DEC.											
15...	.18	--	1220	1.66	161	510	75	3.3	1590	8.1	.0
JAN., 1973											
26...	.24	--	1290	1.75	118	570	150	3.1	1720	6.8	.0
FEB.											
26...	.56	--	482	.66	346	210	52	1.8	687	7.1	.0
MAR.											
30...	.02	--	521	.71	354	230	80	2.3	798	7.8	8.0
APR.											
30...	.00	--	777	1.06	151	330	110	2.6	1110	7.8	10.2
MAY											
30...	.05	--	956	1.30	15.5	440	170	2.7	1350	7.8	25.2
JUNE											
25...	1.2	--	1620	2.20	.00	500	200	4.4	2430	7.8	26.4
AUG.											
02...	.00	--	1560	2.12	.00	550	290	5.7	2260	8.3	24.0
29...	.1[illegible]	--	1400	1.90	.00	490	250	5.3	2060	8.9	27.0

FIELD DETERMINATIONS

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972									
30...	1330	95	25.0	27.0	7.4	2.0	8.2	2600	640
SEP.									
28...	1610	40	13.2	13.6	10.8	2.2	8.5	5000	560
OCT.									
30...	1400	24	4.4	1.4	12.2	6.9	8.4	2830	2330
NOV.									
16...	1355	59	.8	-.3	14.2	5.3	8.8	3870	1980
DEC.									
15...	1355	49	.1	-11.0	11.8	4.5	8.4	1000	770
JAN., 1973									
26...	1430	34	.0	-.6	11.2	4.2	8.0	4200	1900
FEB.									
26...	1330	266	.0	1.5	12.7	4.6	8.2	900	250
MAR.									
30...	1500	252	8.0	1.2	11.2	3.1	8.1	30	8
APR.									
30...	1535	72	10.2	10.0	11.0	3.8	8.2	260	20
MAY									
30...	1330	6.0	25.2	22.8	8.0	5.5	8.5	2880	1440
JUNE									
25...	1400	.00	26.4	33.0	10.2	7.0	8.6	3300	2500
AUG.									
02...	1030	.00	24.0	26.0	9.4	30	9.6	8000	200
29...	1330	.00	27.0	32.0	15.6	34	9.8	100000	750
SEP.									
20...	1430	.00	14.5	12.0	13.4	35	9.2	40000	1600

06478500 JAMES RIVER NEAR SCOTLAND, S. DAK.

LOCATION (revised).--Lat 43°11'09", long 97°38'07", in SW¼SW¼ sec.30, T.97 N., R.57 W., Hutchinson County, 1,000 ft (305 m) downstream from gaging station, on right bank 5.0 ft (2 m) upstream from highway bridge, 0.3 ft (0.5 km) upstream from Dawson Creek, and 5.2 mi (8.4 km) northeast of Scotland.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
OCT.											
27...	1040	58	130	60	100	18	314	0	490	42	.6
NOV.											
21...	1150	104	160	64	110	17	340	0	560	47	.5
DEC.											
19...	1250	79	180	76	160	20	457	0	600	73	.5
JAN.											
31...	1245	146	120	51	100	17	331	0	380	48	.4
FEB.											
22...	1045	60	160	61	100	17	371	0	550	45	.5
MAR.											
29...	1025	1250	93	37	67	16	216	0	340	28	.3
APR.											
26...	1145	289	150	62	120	17	306	0	580	53	.4
MAY											
23...	0945	98	150	70	130	20	307	0	620	55	.5
JUNE											
26...	1110	34	170	82	140	18	298	0	740	60	.5
AUG.											
01...	1130	13	170	85	160	23	220	0	850	71	.5
22...	1100	6.5	170	94	150	22	221	10	880	70	.4
SEP.											
19...	1115	10	180	89	150	3.8	270	0	790	68	.5

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
OCT., 1972											
27...	1040	58	.00	.00	.12	--	1.2	1.3	1.3	.08	.15
NOV.											
21...	1150	104	.44	.01	.45	--	.95	1.4	1.9	.39	.56
DEC.											
19...	1250	79	.28	.00	.20	.20	1.5	1.7	2.0	.48	.87
JAN., 1973											
31...	1245	146	.51	.02	.78	.78	1.2	2.0	2.5	.56	.74
FEB.											
22...	1045	60	.48	.01	--	.91	.99	1.9	2.6	.60	.80
MAR.											
29...	1025	1250	.38	.02	--	.30	1.8	2.1	2.6	.20	.45
APR.											
26...	1145	289	.00	.00	--	.10	1.8	1.9	1.9	.03	.20
MAY											
23...	0945	98	.00	.00	--	.05	1.5	1.5	1.5	.01	.07
JUNE											
26...	1110	34	.00	.00	--	.19	1.8	2.0	2.0	.05	.21
AUG.											
01...	1130	13	.00	.00	--	.37	1.6	2.0	2.0	.11	.41
22...	1100	6.5	.00	.00	--	.06	2.0	2.1	2.1	.22	.43
SEP.											
19...	1115	10	.01	.00	--	.10	1.2	1.3	1.3	.06	.18

06478500 JAMES RIVER NEAR SCOTLAND, S. DAK.--Continued

DRAINAGE AREA.--21,550 mi² (55,810 m²), approximately.

PERIOD OF RECORD.--Chemical analyses: August 1956 to September 1964, July 1967 to September 1973 (discontinued). Water temperatures: January 1953 to September 1969.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 27...	.00	1120	1.52	170	570	310	1.8	1460	7.7	8.6
NOV. 21...	.45	1260	1.71	354	660	380	1.9	1580	8.1	1.0
DEC. 19...	.28	1440	1.96	308	760	390	2.5	1860	8.1	.0
JAN. 31...	.53	1030	1.40	406	510	280	1.9	1330	7.8	.0
FEB. 22...	.09	1200	1.63	194	650	350	1.7	1552	7.6	.0
MAR. 29...	.40	800	1.09	2700	380	210	1.5	1080	7.8	6.5
APR. 26...	.00	1190	1.62	929	630	380	2.1	1530	8.1	13.0
MAY 23...	.00	1270	1.73	336	660	410	2.2	1650	8.3	20.0
JUNE 26...	.00	1400	1.90	129	760	520	2.2	1830	7.5	26.5
AUG. 01...	.00	1580	2.15	56.7	770	590	2.5	1911	7.8	24.0
22...	.00	1600	2.18	28.1	810	610	2.3	1980	8.4	26.0
SEP. 19...	.01	1570	2.14	44.1	820	590	2.3	1910	8.1	15.5

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (CUL. PER 100 ML) (31501)	FECAL COLI-FORM (CUL. PER 100 ML) (31616)
OCT. 27...	1040	58	8.6	8.0	10.2	7.0	8.5	47	2
NOV. 21...	1150	104	1.0	.8	12.6	6.5	8.2	1370	30
DEC. 19...	1250	79	.0	-1.0	14.2	5.2	8.5	<0	<0
JAN. 31...	1245	146	.0	1.0	4.9	4.3	8.2	64	2
FEB. 22...	1045	60	.0	3.9	3.6	4.1	7.6	48	14
MAR. 29...	1025	1250	6.5	6.0	13.2	3.9	8.2	2100	550
APR. 26...	1145	289	13.0	13.0	9.5	4.3	8.8	650	<0
MAY 23...	0945	98	20.0	17.0	7.6	4.5	8.5	210	60
JUNE 26...	1110	34	26.5	30.0	6.5	4.8	8.2	260	110
AUG. 01...	1130	13	24.0	25.0	5.7	5.6	8.3	240	40
22...	1100	6.5	26.0	31.5	5.6	6.5	8.5	240	140
SEP. 19...	1115	10	15.5	20.0	7.9	7.2	8.3	330	120

VERMILLION RIVER BASIN

06479000 VERMILLION RIVER NEAR WAKONDA, S. DAK.

LOCATION.--Lat 42°59'27", long 96°57'49", in SW¼NW¼ sec.2, T.94 N., R.52 W., Clay County, at gaging station, on left bank 40 ft (12 m) downstream from bridge on State Highway 19, 4.3 mi (6.9 km) downstream from Frog Creek, 7.4 mi (11.9 km) southeast of Wakonda, and 29.6 mi (47.6 km) upstream from mouth.

DRAINAGE AREA.--1,680 mi² (4,351 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: June 1967 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical data published for water years 1961, 1966, 1967.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 18...	1235	22	18	170	73	41	8.3	297	540	12	.4	3.4
APR. 25...	1500	149	10	190	93	53	11	306	650	19	.3	.38
JUNE 21...	1230	99	15	140	66	36	11	185	530	7.9	.4	3.2

DATE	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
OCT. 18...	.05	.17	220	1020	1.39	60.6	720	480	.7	1380	7.8	5.0
APR. 25...	.07	.13	170	1180	1.60	475	860	610	.8	1570	8.3	12.6
JUNE 21...	.11	.39	130	912	1.24	244	620	470	.6	1240	7.9	19.1

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

BIG SIOUX RIVER BASIN

06479438 BIG SIOUX RIVER NEAR WATERTOWN, S. DAK.

LOCATION.--Lat 45°00'22", long 97°09'53", in NE¼NE¼NE¼ sec.16, T.118 N., R.52 W., Codington County, at gaging station, on left bank at downstream side of county highway bridge, 4.9 mi (7.9 km) downstream from Mahoney Creek, 6.5 mi (10.5 km) upstream from inlet-outlet to Lake Kampeska, and 7.5 mi (12.1 km) northwest of Watertown.

DRAINAGE AREA.--241 mi² (624 km²), approximately.

PERIOD OF RECORD.--Chemical analysis: April 1973 to September 1973 (partial-record station).
Sediment records: September 1972 to October 1973 (partial-record station).

CHEMICAL ANALYSES, APRIL TO SEPTEMBER 1973

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
APR. 27...	0950	42	9.4	78	41	14	3.5	381	95	7.4	.3	.08
JUNE 20...	1125	5.6	21	70	37	13	3.9	324	68	5.5	.3	.03

DATE	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
APR. 27...	.03	.06	130	437	.59	49.6	360	51	.3	705	8.2	6.4
JUNE 20...	.02	.22	90	379	.52	5.73	330	61	.3	620	8.1	14.6

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

06479438 BIG SIOUX RIVER NEAR WATERTOWN, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)
JAN. 31...	0930	.0	2.4	71	.46
MAR. 02...	1000	.0	100	48	13
APR. 03...	0900	3.5	43	102	12
MAY 01...	0900	5.0	33	61	5.4
JUNE 07...	0930	19.0	18	80	3.9
JULY 12...	1110	25.0	.50	130	.18

BIG SIOUX RIVER BASIN

06479500 BIG SIOUX RIVER AT WATERTOWN, S. DAK.

LOCATION.--Lat 44°56'33", long 97°08'45", in SW¼SW¼NW¼ sec.13, T.117 N., R.53 W., Codington County, at discontinued gaging station, on right bank 20 ft (6 m) downstream from highway bridge, 1.7 mi (2.7 km) downstream from inlet-outlet to Lake Kampeska, 3.5 mi (5.6 km) northwest of Watertown, and 7.1 mi (11.4 km) upstream from Willow Creek.

DRAINAGE AREA.--1,800 mi² (4,660 km²), approximately, of which about 1,400 mi² (3,630 km²) is probably noncontributing.

PERIOD OF RECORD.--Chemical analyses: October 1970 to October 1973, partial-record station (discontinued).

CHEMICAL ANALYSES, OCTOBER 1972

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1620	22	11	53	30	11	6.1	258	71	6.5	.5	.13

DATE	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
OCT. 19...	.06	.19	80	317	.43	18.8	260	48	.3	534	8.0	6.9

NOTE.--Carbonate (CO_3) analysis, 0.0 mg/l.

06479515 WILLOW CREEK NEAR WATERTOWN, S. DAK.

LOCATION.--Lat 44°54'17", long 97°03'31", in NE¼NW¼ sec.34, T.117 N., R.52 W., Codington County, at gaging station, on right bank 5 ft (2 m) downstream from bridge, 2.8 mi (4.5 km) east of Watertown, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--125 mi^2 (324 km^2), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1973 (partial-record station).
Sediment records: October 1971 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical data published for water year 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1545	5.3	8.1	95	51	17	6.2	279	250	7.1	.4	.39
APR. 27...	1035	20	6.1	86	44	9.3	5.9	292	190	5.1	.3	.01
JUNE 20...	1210	7.7	19	92	48	11	6.6	314	170	4.8	.4	.00

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.02	.07	130	578	.79	8.21	450	220	.3	941	8.0	3.9
APR. 27...	.01	.07	120	491	.67	26.5	400	160	.2	757	8.1	7.0
JUNE 20...	.04	.32	100	507	.69	10.5	430	170	.2	790	8.0	18.4

NOTE.--Carbonate (CO$_3$) analysis for all samples, 0.0 mg/l.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
JAN. 31...	1330	.0	2.7	91	.66
MAR. 06...	1740	.0	126	110	37
APR. 02...	1620	6.5	28	50	3.8
MAY 01...	1115	5.0	19	130	6.7
JUNE 07...	1110	20.0	12	129	4.2
JULY 11...	1520	33.0	.29	152	.12

06479529 STRAY HORSE CREEK NEAR CASTLEWOOD, S. DAK.

LOCATION.--Lat 44°43'52", long 96°57'23", in NE¼NE¼NW¼ sec.33, T.115 N., R.51 W., Hamlin County, at gaging station, on right bank at downstream side of highway bridge on State Highway 22, 3.5 mi (5.6 km) east of Castlewood, 6.4 mi (10.3 km) upstream from mouth, and 7.0 mi (11.3 km) north of Dempster.

DRAINAGE AREA.--73.7 mi² (191 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1973 (partial-record station).
Sediment records: October 1970 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical and sediment data published for water year 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1430	1.5	8.9	130	61	21	6.4	262	370	13	.6	1.5
APR. 27...	1125	9.3	2.0	140	62	15	5.1	275	390	9.8	.3	.25
JUNE 20...	1300	4.5	3.8	120	68	25	6.1	200	410	12	.4	.05

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.03	.06	160	767	1.02	3.03	580	360	.4	1080	7.9	3.8
APR. 27...	.02	.11	--	762	1.12	11.8	610	380	.3	1060	8.2	8.2
JUNE 20...	.01	.21	230	748	1.02	21.3	580	420	.5	1060	7.8	15.3

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
JAN. 30...	1645	.0	1.7	135	.62
MAR. 06...	1250	.0	236	135	86
APR. 02...	1030	7.0	11	127	3.8
30...	1715	7.5	4.3	87	1.0
JUNE 06...	1605	22.0	1.8	102	.49
JULY 05...	1625	31.0	.06	78	.01
AUG. 07...	1100	26.0	.02	120	60
SEP. 05...	1525	21.0	.03	11	.00

06479640 HIDEWOOD CREEK NEAR ESTELLINE, S. DAK.

LOCATION.--Lat 44°36'42", long 96°54'17", in SW¼NW¼ sec.12, T.113 N., R.51 W., Hamlin County, at gaging station, on left bank at upstream side of highway bridge, 2.7 mi (4.3 km) north of Estelline, 2.8 mi (4.5 km) southeast of Dempster, and 4.7 mi (7.6 km) upstream from mouth.

DRAINAGE AREA.--164 mi² (425 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1973 (partial-record station).
Sediment records: October 1970 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical and sediment data published for water year 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1400	3.2	13	130	54	30	4.5	334	310	6.8	.6	.36
APR. 27...	1210	28	4.0	91	44	17	5.2	313	190	14	.3	.03
JUNE 20...	1340	3.4	16	110	50	28	6.0	322	260	9.0	.3	.25

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.03	.07	140	715	.97	6.18	550	270	.6	1040	8.0	2.2
APR. 27...	.01	.08	130	520	.71	33.7	410	150	.4	805	8.3	9.4
JUNE 20...	.01	.23	140	639	.87	5.87	480	220	.6	938	7.8	16.8

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/1.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
JAN. 30...	1520	.0	3.5	171	1.6
MAR. 06...	0930	.0	184	56	28
APR. 02...	1315	6.0	62	82	14
30...	1550	8.0	21	81	4.6
JUNE 06...	1500	21.0	16	146	6.3
JULY 06...	1050	25.0	1.9	145	.74
AUG. 02...	0945	24.0	.45	96	.12
SEP. 05...	1425	19.5	.35	203	.19

06479910 SIXMILE CREEK NEAR BROOKINGS, S. DAK.

LOCATION.--Lat 44°20'46", long 96°44'51", in NE¼SE¼ sec.7, T.110 N., R.49 W., Brookings County, at gaging station, on left bank 8.0 ft (2 m) downstream from highway bridge, 0.7 mi (1.1 km) upstream from Interstate Highway 29 and 2.7 mi (4.3 km) northeast of Brookings.

DRAINAGE AREA.--54.0 mi² (140 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1973 (partial-record station).
Sediment records: October 1970 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical and sediment data published for 1970 water year.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1245	1.6	13	120	53	25	4.4	327	280	8.2	.4	.23
APR. 24...	1315	8.8	4.3	110	54	18	4.2	285	290	11	.2	.02
JUNE 20...	1420	.50	9.4	89	58	29	3.3	225	330	5.8	.4	.01

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.04	.06	170	666	.91	2.88	520	250	.5	970	8.2	1.8
APR. 24...	.04	.05	110	632	.86	15.0	500	260	.4	932	8.3	8.1
JUNE 20...	.03	.11	210	636	.87	.86	460	280	.6	932	8.2	18.4

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
JAN. 30...	1310	.0	.98	104	.28
MAR. 05...	1700	.0	107	31	9.0
APR. 02...	1140	5.5	13	75	2.6
30...	1415	8.0	5.9	75	1.2
JUNE 06...	1305	19.0	2.1	75	.43
JULY 05...	1345	27.0	.03	100	.00

06480000 BIG SIOUX RIVER NEAR BROOKINGS, S. DAK.

LOCATION.--Lat 44°10'48", long 96°44'55", in NW¼NW¼ sec.8, T.108 N., R.49 W., Moody County, at gaging station, on right bank 3.0 ft (1 m) downstream from highway bridge, 2.2 mi (3.5 km) downstream from Medary Creek, and 9.5 mi (15.3 km) southeast of Brookings.

DRAINAGE AREA.--4,420 mi² (11,450 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	1025	132	6.7	74	50	35	9.3	266	200	23	.3	.93
APR. 24...	1400	389	5.1	85	51	28	8.9	275	220	18	.2	.13
JUNE 20...	1450	98	9.6	69	49	34	10	277	190	19	.3	.08

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/1.

DATE	TIME	DISSOLVED ARSENIC (AS) (UG/L) (01000)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED CADMIUM (CD) (UG/L) (01025)	DISSOLVED CHROMIUM (CR) (UG/L) (01030)	DISSOLVED COBALT (CO) (UG/L) (01035)	DISSOLVED COPPER (CU) (UG/L) (01040)	DISSOLVED IRON (FE) (UG/L) (01046)	DISSOLVED LEAD (PB) (UG/L) (01049)	DISSOLVED MANGANESE (MN) (UG/L) (01056)
OCT. 19...	1025	0	150	1	0	1	1	20	4	150
JUNE 20...	1450	0	190	0	0	1	10	30	0	60

DATE	DISSOLVED MOLYBDENUM (MO) (UG/L) (01060)	DISSOLVED NICKEL (NI) (UG/L) (01065)	DISSOLVED SILVER (AG) (UG/L) (01075)	DISSOLVED STRONTIUM (SR) (UG/L) (01080)	DISSOLVED VANADIUM (V) (UG/L) (01085)	DISSOLVED ZINC (ZN) (UG/L) (01090)	DISSOLVED ALUMINUM (AL) (UG/L) (01106)	DISSOLVED LITHIUM (LI) (UG/L) (01130)	DISSOLVED SELENIUM (SE) (UG/L) (01145)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 19...	4	10	2	330	1.1	--	0	40	9	.1
JUNE 20...	5	11	0	280	2.2	20	60	40	9	.0

06480000 BIG SIOUX RIVER NEAR BROOKINGS, S. DAK.--Continued

PERIOD OF RECORD.--Chemical analyses: July 1967 to September 1969, October 1969 to September 1973 (partial-record station).
Sediment records: October 1970 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical data published for water years 1960-62, 1966-67, and for suspended-sediment data for water years 1967, 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 19...	.04	.14	150	544	.74	194	390	160	.8	862	7.9	1.5
APR. 24...	.06	.14	130	563	.77	591	420	180	.6	866	8.4	10.0
JUNE 20...	.10	.34	190	518	.70	137	370	150	.8	818	8.0	17.7

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
JAN. 30...	1100	.0	53	63	9.0
MAR. 05...	1410	1.0	1490	37	149
APR. 03...	1250	7.0	625	101	170
30...	1225	9.0	305	104	86
JUNE 06...	1045	19.0	188	167	85
JULY 05...	1140	25.0	640	184	32
SEP. 05...	1125	19.0	18	189	9.2

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.

LOCATION.--Lat 43°47'25", long 96°44'42", in NW¼NW¼ sec.29, T.104 N., R.49 W., Minnehaha County, at gaging station, on left bank at downstream side of highway bridge, 0.2 mi (0.3 km) downstream from confluence of divided channels and 3.0 mi (4.8 km) southwest of Dell Rapids.

DRAINAGE AREA.--5,060 mi² (13,100 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

PERIOD OF RECORD.--Chemical analyses: October 1967 to September 1973.
Water temperatures: October 1967 to September 1973.
Sediment records: October 1967 to September 1973.

EXTREMES.--1972-73:
Dissolved solids: Maximum, 603 mg/l Nov. 1-30, Jan. 1-31; minimum, 376 mg/l Mar. 1-31.
Hardness: Maximum, 440 mg/l Nov. 1-30, Jan. 1-31; minimum, 270 mg/l Mar. 1-31.
Specific conductance: Maximum daily, 1,130 micromhos Jan. 5; minimum daily, 310 micromhos Mar. 4.
Sediment concentrations: Maximum daily, 370 g/l May 30; minimum daily, 38 mg/l Jan. 31.
Sediment discharge: Maximum daily, 3,110 tons Mar. 9; minimum daily, 3.8 tons Sept. 14.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	MEAN DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 01-31	--	168	8.1	68	47	32	5.2	235	210	22	.4	.81
NOV. 01-30	--	220	11	96	49	29	9.4	306	230	20	.4	1.4
JAN. 01-31	--	70	14	99	48	34	8.8	326	200	24	.4	2.9
FEB. 01-28	--	140	9.8	70	34	26	12	235	140	21	.4	3.4
MAR. 01-31	--	1770	14	63	28	12	9.4	178	140	9.5	.4	2.6
APR. 01-30	--	605	7.0	92	49	27	8.4	288	230	15	.4	.58
MAY 01-31	--	533	4.1	72	51	31	6.9	255	210	18	.3	.52
JUNE 01-30	--	164	18	73	47	34	9.2	264	210	20	.4	1.3
JULY 01-31	--	59	17	66	46	36	9.3	232	220	22	.4	.97
AUG. 01-31	--	25	7.8	65	46	42	9.2	214	230	30	.4	1.2
SEP. 01-30	--	24	8.2	68	45	40	7.9	213	220	31	.4	.89
WTD. AVG.	--	--	11	72	38	21	9.0	224	177	14	.4	1.8
TIME WTD. AVG.	--	A 328	11	76	45	31	8.9	250	204	21	.4	1.5
TOT. LOAD (TONS)	--	--	3380	21400	11200	6200	2670	66300	52400	4170	115	544

ANALYSES OF ADDITIONAL SAMPLES

DATE	TIME	DIS-CHARGE	SIO2	CA	MG	NA	K	HCO3	SO4	CL	F	N
OCT. 26...	1140	167	3.1	74	49	32	9.4	262	200	22	.4	.02
NOV. 20...	1120	198	12	100	50	28	8.3	335	220	20	.4	1.0
DEC. 20...	1400	80	16	110	58	41	9.0	394	240	29	.4	2.1
JAN. 30...	1145	92	12	81	41	33	12	295	160	29	.3	1.3
FEB. 21...	1200	95	12	99	48	36	9.7	341	220	26	.4	1.7
MAR. 20...	1045	954	15	91	44	21	9.0	279	200	13	.3	.70
APR. 25...	1000	508	4.3	89	52	27	8.7	287	220	17	.3	.00
MAY 22...	1115	230	1.3	73	50	30	8.4	273	210	18	.2	.08
JUNE 25...	1115	111	6.8	71	46	36	9.4	256	200	20	.4	.01
JULY 30...	1435	39	1.4	54	43	36	8.9	184	210	27	.3	.00
AUG. 28...	1000	18	12	70	49	48	8.5	227	250	33	.5	.41
SEP. 27...	1135	36	6.4	68	44	36	7.0	222	200	32	.3	.10

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/1.
A Based on 334 days of analysis; mean discharge for 365 days, 308 cfs.

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.--Continued

EXTREMES.--Continued
Period of record:
Dissolved solids (1967-68, 1970-73): Maximum, 876 mg/l Feb. 1-29, 1972; minimum, 172 mg/l Mar. 12-23, 1972.
Hardness (1967-68, 1970-73): Maximum, 650 mg/l Feb. 1-29, 1972; minimum, 120 mg/l Mar. 12-23, 1972.
Specific conductance (1967-70, 1973): Maximum daily, 1,260 micromhos Dec. 2, 1969; minimum daily, 138 micromhos Apr. 9, 1969.
Water temperatures (1967-71): Maximum, 31.0°C June 26, 1971; minimum, freezing point on many days during winter period.
Sediment concentrations (1968-73): Maximum daily, 432 mg/l Apr. 9, 1969; minimum daily, 2 mg/l Feb. 5, 1970.
Sediment discharge: Maximum daily, 40,600 tons Apr. 9, 1969; minimum daily, 0.12 tons Mar. 5, 1969, Feb. 5, 1970.

REMARKS.--Sediment records good. Daily samples for chemical analysis composited by discharge. Maximum observed during water year: Dissolved solids, 717 mg/l Dec. 20; hardness, 510 mg/l Dec. 20; water temperatures, 32.0°C July 9-12. Minimum observed during water year: Water temperatures, freezing point on many days during December to February. Flow affected by ice Dec. 2 to Mar. 19. Miscellaneous samples of chemical data published for water years 1960-62, 1967. Additional samples collected for more comprehensive definition of water quality.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 01-31	.14	.15	160	513	.70	233	360	170	.7	731	8.0	--
NOV. 01-30	.16	.16	210	603	.82	358	440	190	.6	897	8.2	--
JAN. 01-31	.31	.31	140	603	.82	114	440	160	.7	915	7.7	--
FEB. 01-28	.52	.53	120	446	.61	169	310	120	.6	715	7.6	--
MAR. 01-31	.24	.28	70	376	.51	1000	270	130	.5	585	7.6	--
APR. 01-30	.09	.10	110	574	.78	938	430	200	.6	871	7.8	--
MAY 01-31	.10	.12	140	524	.71	471	390	180	.7	826	7.7	--
JUNE 01-30	.25	.27	140	548	.75	283	380	160	.8	831	8.0	--
JULY 01-31	.21	.23	200	536	.73	85.4	350	160	.8	813	7.9	--
AUG. 01-31	.22	.23	150	542	.74	36.6	350	180	1.0	857	8.0	--
SEP. 01-30	.24	.30	180	530	.72	34.3	360	180	.9	850	7.8	--
WTD. AVG.	.20	.23	106	463	.63	--	335	155	.5	711	7.7	--
TIME WTD. AVG.	.22	.24	147	527	.72	--	371	168	.7	808	7.8	--
TOT. LOAD (TONS)	60	68	31	137000	--	--	--	--	--	--	--	--

ANALYSES OF ADDITIONAL SAMPLES

DATE	DIS-SOL-VED PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 26...	.02	.10	--	519	.77	234	390	170	.7	821	8.0	6.6
NOV. 20...	--	.15	--	613	1.00	328	460	180	.6	932	8.2	.2
DEC. 20...	--	.42	--	717	1.07	155	510	190	.8	1070	7.8	.0
JAN. 30...	.44	.46	--	527	.82	131	370	130	.7	848	7.4	.0
FEB. 21...	.45	.51	--	635	.85	163	440	170	.7	953	7.6	.0
MAR. 28...	--	.25	--	537	.82	1380	410	180	.5	858	7.9	6.0
APR. 25...	--	.16	--	557	.82	764	440	200	.6	872	8.2	9.0
MAY 22...	--	.13	--	525	.79	326	390	160	.7	824	7.9	20.0
JUNE 25...	--	.30	--	516	.81	155	370	160	.8	819	7.9	25.0
JULY 30...	--	.27	--	471	.72	49.6	310	160	.9	760	7.7	26.5
AUG. 28...	--	.10	--	581	.80	28.2	380	190	1.0	895	7.9	22.0
SEP. 27...	--	.01	--	504	.74	49.0	350	170	.8	809	8.0	15.0

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.--Continued

CHEMICAL ANALYSIS, AUGUST 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972 24...	1430	368	.34	.00	.23	--	1.5	1.7	2.0	.12	--	.33
SEP. 27...	1220	190	.30	.00	.07	--	.68	.75	1.0	.01	.05	.21
OCT. 26...	1140	167	.02	.00	.21	--	1.6	1.8	1.8	.01	.02	.10
NOV. 20...	1120	198	.99	.01	.08	--	1.1	1.2	2.2	.06	--	.15
DEC. 20...	1400	80	2.1	.02	.52	.52	1.6	2.2	4.3	.25	--	.42
JAN., 1973 30...	1145	92	1.3	.03	1.0	1.0	1.2	2.2	3.5	.34	.44	.46
FEB. 21...	1200	95	1.7	.03	--	.82	.78	1.6	3.7	.43	.45	.51
MAR. 28...	1045	954	.66	.04	--	.26	1.4	1.7	2.6	.05	--	.25
APR. 25...	1000	508	.00	.00	--	.07	1.6	1.7	1.7	.03	--	.16
MAY 22...	1115	230	.00	.00	--	.05	1.7	1.7	1.7	.00	--	.13
JUNE 25...	1115	111	.01	.00	--	.10	2.7	2.8	2.8	.03	--	.30
JULY 30...	1435	39	.00	.00	--	.10	1.3	1.4	1.4	.04	--	.27
AUG. 28...	1000	18	.33	.08	--	.50	1.1	1.6	2.0	.12	--	.10
SEP. 27...	1135	36	.08	.02	--	.40	2.5	2.9	3.4	.07	--	.41

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972 24...	1430	368	20.2	22.6	10.2	3.8	8.3	540	220
SEP. 27...	1220	190	12.6	14.8	12.0	6.5	8.6	3330	456
OCT. 26...	1140	167	6.6	13.0	15.8	6.6	8.5	1730	210
NOV. 20...	1120	198	.2	2.4	14.4	4.9	8.6	3470	370
DEC. 20...	1400	80	.0	.4	12.0	4.2	7.9	7470	787
JAN., 1973 30...	1145	92	.0	-1.0	10.4	3.9	7.9	4100	560
FEB. 21...	1200	95	.0	-2.0	10.8	3.5	7.8	7130	1500
MAR. 28...	1045	954	6.0	4.5	12.0	2.5	8.7	160	100
APR. 25...	1000	508	9.0	9.0	11.4	2.8	9.1	160	30
MAY 22...	1115	230	19.0	16.5	8.3	3.0	8.6	620	800
JUNE 25...	1115	111	25.0	30.0	8.3	3.5	8.3	2200	380
JULY 30...	1435	39	26.5	22.5	11.9	3.8	8.7	120	290
AUG. 28...	1000	18	22.0	27.0	5.0	3.8	7.8	2200	970
SEP. 27...	1135	36	15.0	14.0	8.4	4.2	8.3	3800	2100

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.--Continued

SPECIFIC CONDUCTANCE (MICROMHOS/CM AT 25°C), WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	840	780	1000	1110	800	360	920	870	800	860	760	880
2	840	800	1000	1120	810	350	910	875	780	820	760	860
3	820	800	1000	1120	740	330	910	880	820	800	790	850
4	820	800	1000	1120	740	310	920	875	850	800	810	840
5	820	800	1050	1130	710	320	910	885	880	830	820	810
6	800	780	1050	1120	720	330	900	895	810	780	830	830
7	810	920	1050	1110	750	350	900	890	880	820	820	840
8	780	910	1100	1100	770	350	900	865	870	840	820	830
9	780	920	1100	1080	760	370	900	870	850	830	810	840
10	800	940	1120	1080	780	390	900	895	840	820	810	840
11	810	940	1120	1060	780	410	890	890	840	820	810	850
12	820	950	1140	1080	970	460	900	895	840	820	820	870
13	820	950	1140	1090	870	500	900	855	840	820	820	860
14	810	950	1120	1090	890	540	900	870	850	830	820	860
15	820	930	1100	1000	900	570	880	860	860	830	830	850
16	830	960	1100	1000	920	590	880	860	860	860	840	850
17	810	960	1100	750	960	640	880	855	840	860	820	840
18	810	950	1120	1000	930	690	900	840	820	850	820	850
19	810	970	1120	940	980	710	900	825	850	840	810	830
20	810	950	1120	940	1000	720	900	825	860	840	830	810
21	830	970	1100	960	950	730	900	840	860	830	830	820
22	830	970	1100	940	950	730	860	830	870	830	840	830
23	830	970	1100	940	600	740	880	820	860	840	850	820
24	830	970	1100	920	500	750	880	805	860	850	860	830
25	830	970	1100	770	480	790	870	820	850	870	860	810
26	830	970	1050	660	420	800	870	820	860	850	860	780
27	830	970	1050	670	330	820	870	815	860	810	870	780
28	810	970	1080	680	320	850	860	790	850	810	870	780
29	800	970	1080	890	---	860	860	770	850	800	880	730
30	800	970	1100	850	---	870	870	765	860	810	890	710
31	790	---	1100	810	---	890	---	760	---	810	890	---
AVG	815	922	1080	973	762	585	891	845	847	828	831	826

TEMPERATURE (°C) OF WATER, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	4.0	---	---	0.0	1.0	9.0	9.0	25.5	28.0	29.0	26.5
2	16.0	4.5	---	---	1.0	1.0	8.0	11.0	21.0	26.5	30.0	26.5
3	19.0	5.5	---	---	2.0	3.5	9.0	14.5	24.5	30.0	30.0	23.5
4	20.0	7.0	---	---	3.5	2.0	9.0	15.5	22.0	30.0	30.0	22.0
5	---	10.0	---	---	1.0	2.0	10.0	19.0	22.0	25.5	---	22.0
6	14.5	7.0	---	---	---	3.5	10.0	15.5	24.5	28.0	31.0	24.5
7	16.5	5.5	---	---	---	4.5	6.5	16.5	25.5	31.5	31.0	22.0
8	14.5	6.5	---	---	0.0	4.5	5.5	20.0	26.5	30.0	31.0	20.0
9	---	5.5	---	---	1.0	4.5	---	---	30.0	32.0	26.5	20.0
10	14.5	6.5	---	---	1.0	4.5	4.5	16.5	30.0	32.0	29.0	25.5
11	12.0	---	---	0.0	1.0	4.5	9.0	---	21.0	32.0	29.0	---
12	10.5	4.5	---	0.0	1.0	5.5	10.0	18.0	25.5	32.0	29.0	18.0
13	15.5	0.0	0.0	2.0	0.0	9.0	11.0	14.5	24.5	25.5	29.0	19.0
14	11.0	1.0	0.0	3.5	---	8.0	---	15.5	26.5	25.5	29.0	21.0
15	---	0.0	---	4.5	---	5.5	8.0	16.5	28.0	28.0	30.0	15.5
16	10.0	0.0	---	6.5	---	4.5	10.0	15.5	28.0	26.5	31.0	15.5
17	6.5	1.0	---	6.5	1.0	4.5	15.5	16.5	26.5	29.0	31.0	16.5
18	5.5	2.0	---	---	2.0	4.5	---	21.0	22.0	31.0	26.5	16.5
19	5.0	1.0	---	1.0	2.0	8.0	---	21.5	21.0	28.0	31.0	16.5
20	5.5	1.0	---	0.0	3.5	6.5	---	22.0	21.0	25.5	26.5	15.5
21	4.5	2.0	---	2.0	0.5	6.5	13.5	25.5	22.0	24.5	26.5	15.5
22	---	3.5	---	3.5	2.0	4.5	14.5	18.0	28.0	21.0	25.5	18.0
23	4.0	3.5	---	4.5	4.5	---	16.5	25.5	28.0	24.5	21.0	16.5
24	2.0	4.0	---	5.5	---	5.5	11.0	15.5	27.0	26.5	22.0	18.0
25	3.5	2.0	---	5.5	1.0	6.5	13.0	20.0	29.0	25.5	23.5	19.0
26	---	---	---	3.5	0.0	9.0	11.0	---	29.0	26.5	26.5	15.5
27	---	---	---	1.0	1.0	10.0	13.5	18.5	25.5	26.5	31.0	18.0
28	---	---	---	---	3.5	6.5	14.5	20.0	25.5	29.0	30.0	15.5
29	---	---	---	0.0	---	3.5	13.5	21.0	25.5	30.0	25.5	15.5
30	---	---	---	0.0	---	8.0	10.0	22.0	21.0	26.5	29.0	15.5
31	---	---	---	1.0	---	8.0	---	24.5	---	25.5	25.5	---
AVG	---	B 3.5	---	---	C 1.5	D 5.5	E 10.5	F 18.0	25.0	28.0	D 28.0	G19.0

B Based on 24 days of data.
C Based on 22 days of data.
D Based on 30 days of data.
E Based on 25 days of data.
F Based on 28 days of data.
G Based on 29 days of data.

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	OCTOBER			NOVEMBER			DECEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	169	150	68	180	74	36	135	90	33
2	167	135	61	212	71	41	130	90	32
3	161	141	61	233	80	50	95	85	22
4	153	156	64	280	80	60	105	90	26
5	154	150	62	323	78	68	115	95	29
6	170	144	66	330	77	69	118	95	30
7	170	129	59	333	75	67	122	100	33
8	170	139	64	322	72	63	127	95	33
9	182	140	69	293	69	55	132	100	36
10	188	139	71	274	68	50	127	105	36
11	186	143	72	250	66	45	122	110	36
12	184	115	57	245	64	42	117	105	33
13	183	130	64	226	62	38	110	110	33
14	179	106	51	199	60	32	105	115	33
15	178	105	50	178	58	28	100	115	31
16	170	100	46	156	58	24	97	110	29
17	165	102	45	164	57	25	93	105	26
18	165	100	45	187	57	29	88	100	24
19	165	98	44	194	57	30	85	98	22
20	166	96	43	198	57	30	80	96	21
21	167	94	42	200	60	32	80	94	20
22	163	92	40	192	63	33	78	92	19
23	163	89	39	185	67	33	77	90	19
24	164	88	39	189	70	36	75	88	18
25	165	86	38	184	70	35	75	86	17
26	167	85	38	184	72	36	80	84	18
27	160	84	36	187	75	38	83	82	18
28	158	82	35	198	80	43	87	80	19
29	158	80	34	152	78	32	90	75	18
30	160	78	34	138	85	32	85	70	16
31	170	76	35	--	--	--	80	68	15
TOTAL	5220	--	1572	6586	--	1232	3093	--	795

	JANUARY			FEBRUARY			MARCH		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	75	66	13	98	56	15	500	59	80
2	70	64	12	100	58	16	800	60	130
3	67	62	11	103	60	17	1200	70	227
4	63	60	10	107	62	18	1700	75	344
5	60	58	9.4	110	64	19	2100	77	437
6	55	56	8.3	113	66	20	2300	101	627
7	50	54	7.3	116	68	21	2800	82	620
8	45	52	6.3	113	70	21	3000	111	899
9	40	50	5.4	110	70	21	3600	320	3110
10	43	50	5.8	105	70	20	3200	197	1700
11	47	48	6.1	95	71	18	2970	176	1410
12	50	55	7.4	85	71	16	3300	179	1590
13	52	60	8.4	80	71	15	2320	156	977
14	55	65	9.7	75	71	14	2200	178	1060
15	60	70	11	70	72	14	2280	164	1010
16	65	75	13	65	72	13	2240	144	871
17	70	77	15	70	72	14	2100	116	658
18	75	80	16	75	60	12	1950	147	774
19	86	100	23	80	50	11	1710	126	582
20	100	200	54	88	45	11	1480	153	611
21	92	190	47	95	44	11	1290	127	442
22	88	180	43	103	46	13	1140	115	354
23	85	170	39	110	48	14	1030	100	278
24	82	150	33	200	50	27	942	83	211
25	80	136	29	350	50	47	930	90	226
26	82	120	27	450	52	63	926	88	220
27	85	100	23	400	56	60	926	102	255
28	88	80	19	350	58	55	954	126	325
29	90	60	15	--	--	--	967	99	258
30	92	50	12	--	--	--	960	112	290
31	95	38	9.7	--	--	--	947	102	261
TOTAL	2187	--	548.8	3916	--	616	54762	--	20837

06481000 BIG SIOUX RIVER NEAR DELL RAPIDS, S. DAK.--Continued

SUSPENDED-SEDIMENT DISCHARGE, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

	APRIL			MAY			JUNE		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	916	90	223	445	115	138	260	203	143
2	882	102	243	445	118	142	268	299	216
3	844	103	235	475	136	174	265	354	253
4	796	109	234	502	178	241	251	337	228
5	752	126	256	502	180	244	235	350	222
6	718	142	275	493	168	224	224	235	142
7	677	123	225	495	161	215	219	220	130
8	650	96	168	469	170	215	207	222	124
9	621	100	168	431	180	209	195	222	117
10	599	101	163	405	196	214	186	231	116
11	573	98	152	385	175	182	172	240	111
12	557	100	150	367	154	153	173	265	124
13	544	101	148	351	175	166	165	250	111
14	529	115	164	336	158	143	167	250	113
15	534	124	179	321	199	172	160	250	108
16	548	116	172	299	226	182	145	250	98
17	585	114	180	289	178	139	141	250	95
18	617	120	200	278	179	134	149	250	101
19	623	125	210	267	198	143	141	260	99
20	592	130	208	254	239	164	132	270	96
21	567	137	210	243	185	121	127	291	100
22	560	143	216	230	286	178	123	280	93
23	536	143	207	220	224	133	123	280	93
24	515	121	168	214	323	187	122	275	91
25	508	126	173	211	224	128	111	270	81
26	495	181	242	211	200	114	102	270	74
27	472	142	181	224	178	108	96	270	70
28	456	150	185	232	235	147	93	270	68
29	435	142	167	237	276	177	85	270	62
30	434	148	173	240	370	240	83	270	61
31	--	--	--	246	255	169	--	--	--
TOTAL	18135	--	5875	10317	--	5296	4920	--	3540

	JULY			AUGUST			SEPTEMBER		
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
1	86	232	54	31	87	7.3	16	115	5.0
2	97	228	60	30	93	7.5	16	120	5.2
3	93	220	55	30	102	8.3	22	125	7.4
4	90	223	54	28	119	9.0	23	129	8.0
5	89	210	50	30	120	9.7	21	120	6.8
6	84	210	48	29	120	9.4	19	115	5.9
7	81	200	44	31	104	8.7	18	109	5.3
8	74	198	40	31	112	9.4	16	120	5.2
9	75	200	41	30	133	11	16	140	6.0
10	75	190	38	29	92	7.2	16	147	6.4
11	71	185	35	31	100	8.4	15	130	5.3
12	67	151	27	29	100	7.8	15	120	4.9
13	60	157	25	27	100	7.3	14	110	4.2
14	55	195	29	27	97	7.1	14	100	3.8
15	53	185	26	30	78	6.3	18	100	4.9
16	51	165	23	30	130	11	22	100	5.9
17	49	162	21	27	135	9.8	23	99	6.1
18	44	117	14	25	152	10	25	99	6.7
19	42	146	17	24	97	6.3	25	100	6.8
20	40	153	17	23	122	7.6	26	98	6.9
21	40	136	15	23	125	7.8	27	100	7.3
22	39	151	16	20	130	7.0	27	105	7.7
23	41	136	15	18	135	6.6	28	110	8.3
24	46	177	22	20	142	7.7	31	115	9.6
25	46	165	20	20	150	8.1	29	119	9.3
26	44	133	16	21	160	9.1	34	120	11
27	43	154	18	20	173	9.3	36	125	12
28	42	114	13	18	150	7.3	34	129	12
29	40	122	13	16	130	5.6	51	120	17
30	39	118	12	16	108	4.7	48	110	14
31	33	99	8.8	16	110	4.8	--	--	--
TOTAL	1829	--	886.8	780	--	247.1	725	--	224.9

TOTAL DISCHARGE FOR YEAR (CFS-DAYS)	112470
TOTAL SUSPENDED-SEDIMENT DISCHARGE FOR YEAR (TONS)	41670.6

06481500 SKUNK CREEK AT SIOUX FALLS, S. DAK.
(Formerly published as Skunk Creek near Sioux Falls)

LOCATION.--Lat 43°32'01", long 96°47'26", in NW¼SW¼ sec.24, T.101 N., R.50 W., Minnehaha County, at gaging station, on right bank 5.0 ft (2 m) downstream from bridge on Marion Road, 1.3 mi (2.1 km) upstream from mouth, 1.8 mi (2.9 km) downstream from small right-bank tributary, and 4.0 mi (6.4 km) southwest of Sioux Falls.

DRAINAGE AREA.--570 mi² (1,480 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: November 1971 to September 1973 (partial-record station). Sediment records: October 1971 to September 1973 (partial-record station).

REMARKS.--Prior to October 1971, sampling site was 1.9 mi (3.1 km) upstream. Miscellaneous samples for chemical data published for water years 1962, 1967, and for suspended-sediment data for water year 1970.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT.												
18...	1640	8.8	15	110	58	33	9.9	329	280	27	.3	.98
APR.												
25...	0915	7.7	2.2	130	85	65	18	304	490	58	.3	.16
JUNE												
21...	1030	8.2	6.3	97	68	51	14	253	350	41	.3	.08

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT.												
18...	.02	.06	90	699	.95	16.6	510	240	.6	1040	7.6	6.0
APR.												
25...	.08	.09	140	999	1.36	20.8	670	430	1.1	1410	8.3	8.0
JUNE												
21...	.02	.24	150	752	1.02	16.6	520	310	1.0	1130	8.1	18.0

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPER-ATURE (DEG C) (00010)	INSTAN-TANEOUS DIS-CHARGE (CFS) (00061)	SUS-PENDED SEDI-MENT (MG/L) (80154)	SUS-PENDED SEDI-MENT DIS-CHARGE (T/DAY) (80155)
FEB.					
01...	1515	.0	6.2	53	.89
MAR.					
08...	1615	3.0	515	201	279
APR.					
03...	1625	8.0	195	116	61
MAY					
02...	1515	9.0	89	169	28
JUNE					
08...	1400	25.0	19	137	7.0
JULY					
02...	1110	25.0	5.3	93	1.3
AUG.					
09...	1445	26.0	2.1	70	.39
SEP.					
07...	1125	19.0	1.1	136	.40

06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, S. DAK.

LOCATION.--Lat 43°34'01", long 96"42'39", in SW¼NW¼ sec.10, T.101 N., R.49 W., Minnehaha County, at gaging station, on right bank 20 ft (6 m) downstream from bridge on North Cliff Avenue and 4.1 mi (6.6 km) upstream from Slip Up Creek.

DRAINAGE AREA.--5,770 mi² (14,940 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

PERIOD OF RECORD.--Chemical analyses: August 1972 to September 1973.

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
AUG., 1972											
28...	1230	414	84	47	35	11	296	0	210	22	.4
SEP.											
27...	1435	215	79	47	38	9.6	282	0	200	30	.4
OCT.											
26...	1325	225	73	47	53	11	272	0	210	55	.5
NOV.											
20...	1300	260	100	52	39	9.0	337	0	240	34	.4
DEC.											
20...	1215	118	120	60	85	10	430	0	270	87	.5
JAN., 1973											
30...	1245	120	93	43	62	12	327	0	200	64	.4
FEB.											
21...	1300	128	96	46	85	12	295	0	240	100	.6
MAR.											
28...	1200	1310	95	45	26	10	270	0	240	18	.3
APR.											
25...	1200	615	97	57	37	11	302	0	290	28	.3
MAY											
22...	1225	290	85	56	36	9.5	258	11	240	24	.3
JUNE											
25...	1230	154	79	47	67	9.6	269	0	210	37	.5
JULY											
31...	0945	50	64	37	93	11	212	0	200	110	.6
AUG.											
27...	1310	36	68	40	170	15	234	0	280	210	1.4
SEP.											
25...	1230	43	73	41	220	15	315	0	230	270	1.3

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972											
28...	1230	414	.19	.00	.21	--	1.6	1.8	2.0	.17	.45
SEP.											
27...	1435	215	.31	.16	.15	--	.77	.92	1.4	.07	.34
OCT.											
26...	1325	225	.12	.01	2.8	--	1.0	3.8	3.9	.53	.86
NOV.											
20...	1300	260	.86	.02	1.1	--	1.2	2.3	3.2	.25	.43
DEC.											
20...	1215	118	2.0	.02	4.9	4.9	.40	5.3	7.3	1.3	1.9
JAN., 1973											
30...	1245	120	1.4	.08	4.6	4.6	1.1	5.7	7.2	1.7	1.7
FEB.											
21...	1300	128	1.6	.19	--	5.8	.00	5.8	13	1.8	2.0
MAR.											
28...	1200	1310	.77	.02	--	.28	1.4	1.7	2.5	.18	.27
APR.											
25...	1200	615	.01	.00	--	.07	1.6	1.7	1.7	.01	.32
MAY											
22...	1225	290	.00	.01	--	.07	1.6	1.7	1.7	.03	.21
JUNE											
25...	1230	154	.01	.03	--	.79	2.2	3.0	3.0	.54	.74
JULY											
31...	0945	50	.33	.21	--	3.6	.00	1.7	2.3	3.0	3.5
AUG.											
27...	1310	36	.21	.40	--	13	.00	13	14	6.9	22
SEP.											
25...	1230	43	.17	.18	--	20	2.0	22	27	1.8	8.4

06482020 BIG SIOUX RIVER AT NORTH CLIFF AVENUE, AT SIOUX FALLS, S. DAK.--Continued

CHEMICAL ANALYSES, AUGUST 1972 TO SEPTEMBER 1973

DATE	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (RESIDUE AT 180 C) (MG/L) (70300)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
AUG., 1972											
24...	.19	--	612	.83	684	400	160	.8	870	8.2	21.2
SEP.											
27...	.47	--	708	.96	411	390	160	.8	857	7.9	13.6
OCT.											
26...	.13	--	648	.88	394	380	150	1.2	982	7.9	9.2
NOV.											
20...	.88	--	792	1.08	556	460	190	.8	996	8.3	1.1
DEC.											
20...	2.0	--	928	1.26	296	550	190	1.6	1340	7.9	1.0
JAN., 1973											
30...	1.5	--	728	.99	236	410	140	1.3	1080	7.6	.5
FEB.											
21...	1.8	--	772	1.05	267	430	190	1.8	1170	7.1	1.2
MAR.											
28...	.79	--	651	.89	2300	420	200	.6	932	7.7	7.0
APR.											
25...	.01	--	712	.97	1180	400	230	.7	839	8.2	10.5
MAY											
22...	.01	--	660	.90	517	430	200	.8	903	8.6	20.0
JUNE											
25...	.06	--	653	.89	272	390	170	1.0	906	8.0	24.5
JULY											
31...	.54	--	694	.94	95.4	310	140	2.3	1050	7.4	24.0
AUG.											
27...	.61	--	902	1.23	89.4	330	140	4.0	1500	7.6	26.5
SEP.											
25...	.35	--	992	1.35	118	350	93	5.1	1700	7.5	21.0

FIELD DETERMINATIONS

DATE	TIME	DISCHARGE (CFS) (00060)	TEMPERATURE (DEG C) (00010)	AIR TEMPERATURE (DEG C) (00020)	DISSOLVED OXYGEN (MG/L) (00300)	BIOCHEMICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMMEDIATE COLIFORM (COL. PER 100 ML) (31501)	FECAL COLIFORM (COL. PER 100 ML) (31616)
AUG., 1972									
24...	1230	414	21.2	23.4	9.8	6.2	8.4	3500	1760
SEP.									
27...	1435	215	13.6	15.4	11.2	5.8	8.5	8120	1980
OCT.									
26...	1325	225	9.2	19.4	11.0	7.0	8.4	4430	100000
NOV.									
20...	1300	260	1.1	3.5	13.6	6.5	8.6	36000	6800
DEC.									
20...	1215	118	1.0	.0	13.0	5.1	7.9	78000	20000
JAN., 1973									
30...	1245	120	.5	.0	12.8	4.0	8.0	86000	15000
FEB.									
21...	1300	128	1.2	-3.0	14.4	4.6	8.0	18000	9200
MAR.									
28...	1200	1310	7.0	5.0	9.2	6.2	8.4	600	400
APR.									
25...	1200	615	10.5	9.5	10.4	5.5	8.9	600	1800
MAY									
22...	1225	290	20.0	18.0	9.7	4.6	8.0	1300	200
JUNE									
25...	1230	154	24.5	24.0	8.8	3.9	8.6	6200	1100
JULY									
31...	0945	50	24.0	15.5	6.8	4.5	7.8	190000	18600
AUG.									
27...	1310	36	26.5	35.5	8.4	5.2	7.5	7400	1400
SEP.									
25...	1230	43	21.0	22.0	8.3	5.8	7.7	34000	5900

06482610 SPLIT ROCK CREEK AT CORSON, S. DAK.

LOCATION.--Lat 43°36'59", long 96°33'54", in NE¼NW¼ sec.26, T.102 N., R.48 W., Minnehaha County, at gaging station, on left bank 6 ft (2 m) downstream from highway bridge, 0.3 mi (0.5 km) east of Corson and 3.4 mi (5.5 km) upstream from mouth.

DRAINAGE AREA.--475 mi² (1,230 km²), approximately.

PERIOD OF RECORD.--Chemical analyses: October 1970 to September 1973 (partial-record station).
Sediment records: October 1970 to September 1973 (partial-record station).

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 19...	0905	15	1.3	64	33	24	4.5	263	100	24	.6	.12
APR. 25...	1100	46	.2	65	37	24	5.3	254	120	25	.4	.01
JUNE 21...	0900	18	6.0	60	37	27	5.1	265	92	25	.5	.03

DATE	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
OCT. 19...	.03	.13	90	381	.52	15.4	300	88	.6	648	8.0	1.0
APR. 25...	--	.16	--	415	.57	51.5	310	85	.6	675	8.5	9.6
JUNE 21...	--	.37	--	384	.56	18.7	300	85	.7	641	8.1	17.5

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)
FEB. 01...	1000	.0	42	26	2.9
MAR. 08...	0840	.0	410	31	34
APR. 04...	0815	4.5	63	90	15
MAY 02...	0855	5.5	65	56	9.8
JUNE 08...	0900	22.0	21	72	4.1
JULY 03...	1045	25.0	18	107	5.2
AUG. 09...	1015	24.0	5.9	59	.94
SEP. 07...	0920	17.5	5.0	116	1.6

06485500 BIG SIOUX RIVER AT AKRON, IOWA

LOCATION.--Lat 42°49'42", long 96°33'45", in NE¼SW¼ sec.31, T.93 N., R.48 W., Plymouth County, Iowa, at gaging station, on left bank at west edge of Akron, 0.6 mi (1.0 km) downstream from bridge on State Highway 48, and 2.3 mi (3.7 km) upstream from Union Creek.

DRAINAGE AREA.--9,030 mi² (23,390 km²), approximately, of which about 1,970 mi² (5,100 km²) is probably noncontributing.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	DISCHARGE (CFS) (00060)	DISSOLVED SILICA (SIO2) (MG/L) (00955)	DISSOLVED CALCIUM (CA) (MG/L) (00915)	DISSOLVED MAGNESIUM (MG) (MG/L) (00925)	DISSOLVED SODIUM (NA) (MG/L) (00930)	DISSOLVED POTASSIUM (K) (MG/L) (00935)	BICARBONATE (HCO3) (MG/L) (00440)	DISSOLVED SULFATE (SO4) (MG/L) (00945)	DISSOLVED CHLORIDE (CL) (MG/L) (00940)	DISSOLVED FLUORIDE (F) (MG/L) (00950)	DISSOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 18...	1335	350	4.3	85	44	42	7.0	273	200	41	.4	2.2
APR. 25...	1600	1450	3.9	100	48	27	7.3	320	220	22	.4	1.4
JUNE 21...	1330	1110	8.1	70	29	21	6.5	195	140	19	.5	2.7

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

DATE	TIME	DISSOLVED ARSENIC (AS) (UG/L) (01000)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED CADMIUM (CD) (UG/L) (01025)	DISSOLVED CHROMIUM (CR) (UG/L) (01030)	DISSOLVED COBALT (CO) (UG/L) (01035)	DISSOLVED COPPER (CU) (UG/L) (01040)	DISSOLVED IRON (FE) (UG/L) (01046)	DISSOLVED LEAD (PB) (UG/L) (01049)	DISSOLVED MANGANESE (MN) (UG/L) (01056)
OCT. 18...	1335	0	130	1	0	2	3	20	2	40
JUNE 21...	1330	5	100	0	0	1	17	20	1	0

PESTICIDES

DATE	TIME	ALDRIN (UG/L) (39330)	CHLORDANE (UG/L) (39350)	DDD (UG/L) (39360)	DDE (UG/L) (39365)	DDT (UG/L) (39370)	DIAZINON (UG/L) (39570)	DIELDRIN (UG/L) (39380)	ENDRIN (UG/L) (39390)	HEPTACHLOR (UG/L) (39410)
FEB. 08...	1130	.00	.0	.00	.00	.00	.00	.00	.00	.00
APR. 12...	1045	.00	.0	.00	.00	.00	.00	.00	.00	.00
AUG. 24...	1010	.00	.0	.00	.00	.00	.01	.03	.00	.00

06485500 BIG SIOUX RIVER AT AKRON, IOWA--Continued

PERIOD OF RECORD.--Chemical analyses: June 1967 to September 1973 (partial-record station). Sediment records: September 1970 to September 1973 (partial-record station).

REMARKS.--Miscellaneous samples for chemical data published for water years 1962, 1966-67, and for sediment data for water year 1967.

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	DISSOLVED PHOSPHORUS (P) (MG/L) (00666)	TOTAL PHOSPHORUS (P) (MG/L) (00665)	DISSOLVED BORON (B) (UG/L) (01020)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS) (MG/L) (70301)	DISSOLVED SOLIDS (TONS PER AC-FT) (70303)	DISSOLVED SOLIDS (TONS PER DAY) (70302)	HARDNESS (CA,MG) (MG/L) (00900)	NONCARBONATE HARDNESS (MG/L) (00902)	SODIUM ADSORPTION RATIO (00931)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)
OCT. 18...	.25	.48	130	570	.78	539	390	170	.9	901	8.0	6.5
APR. 25...	.13	.24	100	593	.81	2320	450	160	.6	920	8.3	12.4
JUNE 21...	.40	.85	100	403	.55	1210	290	130	.5	648	8.0	19.8

DATE	DISSOLVED MOLYBDENUM (MO) (UG/L) (01060)	DISSOLVED NICKEL (NI) (UG/L) (01065)	DISSOLVED SILVER (AG) (UG/L) (01075)	DISSOLVED STRONTIUM (SR) (UG/L) (01080)	DISSOLVED VANADIUM (V) (UG/L) (01085)	DISSOLVED ZINC (ZN) (UG/L) (01090)	DISSOLVED ALUMINUM (AL) (UG/L) (01106)	DISSOLVED LITHIUM (LI) (UG/L) (01130)	DISSOLVED SELENIUM (SE) (UG/L) (01145)	TOTAL MERCURY (HG) (UG/L) (71900)
OCT. 18...	3	20	4	350	2.1	--	10	30	4	.1
JUNE 21...	3	14	0	260	2.3	10	30	20	8	.3

PESTICIDES

DATE	HEPTACHLOR EPOXIDE (UG/L) (39420)	LINDANE (UG/L) (39340)	MALATHION (UG/L) (39530)	METHYL PARATHION (UG/L) (39600)	PARATHION (UG/L) (39540)	2,4-D (UG/L) (39730)	2,4,5-T (UG/L) (39740)	SILVEX (UG/L) (39760)	PCB (UG/L) (39516)
FEB. 08...	.00	.00	.00	.00	.00	.17	.01	.00	.0
APR. 12...	.00	.00	.00	.00	.00	.05	.00	.00	.0
AUG. 24...	.00	.00	.00	.00	.00	.32	.00	.00	.0

SUSPENDED-SEDIMENT DISCHARGE MEASUREMENTS, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

DATE	TIME	TEMPERATURE (DEG C) (00010)	INSTANTANEOUS DISCHARGE (CFS) (00061)	SUSPENDED SEDIMENT (MG/L) (80154)	SUSPENDED SEDIMENT DISCHARGE (T/DAY) (80155)
APR. 12...	1045	6.0	1590	204	876
JULY 23...	1025	20.0	273	168	124
AUG. 24...	1010	20.0	558	1060	160
SEP. 24...	0955	17.0	140	150	57

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

GRAND RIVER BASIN

06357000 SHADEHILL RESERVOIR AT SHADEHILL, S. DAK. (LAT 45 45 12 LONG 102 12 12)

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 03...	1130	--	5.4	38	23	210	7.7	304	390	4.3	.4	.16
JULY 25...	1500	--	5.6	41	27	240	7.9	324	440	5.3	.4	.09
SEP. 17...	1430	--	6.3	41	27	240	9.2	280	450	5.0	.4	.15

BIG SIOUX RIVER BASIN

06482830 BEAVER CREEK NEAR CANTON, S. DAK. (LAT 43 19 04 LONG 096 36 31)

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)
OCT. 18...	1545	--	17	350	140	68	11	331	1300	4.2	.5	.82
APR. 25...	1400	--	4.2	290	130	65	9.4	310	1100	6.9	.4	.80
JUNE 21...	1125	--	6.4	300	140	74	11	223	1300	6.3	.4	.01

NOTE.--Carbonate (CO_3) analysis for all samples, 0.0 mg/l.

BIG SIOUX RIVER NEAR HUDSON, S. DAK. (LAT 44 22 25 LONG 100 22 20)

DATE	TIME	DIS-CHARGE (CFS) (00060)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)
AUG., 1972 23...	0930	--	92	46	38	11	299	0	220	30	.4
SEP. 28...	0845	--	91	48	45	9.3	283	0	220	38	.4
OCT. 26...	1605	--	85	48	44	10	271	0	230	39	.5
NOV. 20...	1530	--	110	52	49	9.2	341	0	260	46	.4
DEC. 20...	0955	--	140	62	82	10	430	0	300	84	.4
JAN., 1973 30...	1430	--	72	29	52	14	253	0	130	65	.4
FEB. 21...	1440	--	100	41	63	12	302	0	230	71	.6
APR. 25...	1415	--	100	55	33	9.4	256	15	260	26	.5
MAY 22...	0940	--	93	27	86	8.7	296	0	250	36	.5
JUNE 25...	0930	--	71	43	54	9.0	208	0	220	52	.5
JULY 30...	0950	--	34	11	15	7.0	121	0	53	17	.3
AUG. 27...	1025	--	56	47	100	11	145	0	290	120	.5
SEP. 25...	0950	--	110	47	92	9.2	272	17	270	100	.5

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

GRAND RIVER BASIN

06357000 SHADEHILL RESERVOIR AT SHADEHILL, S. DAK. (LAT 45 45 12 LONG 102 12 12)

DATE	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
OCT. 03...	.04	.07	400	829	1.13	--	190	0	6.6	1257	8.3	15.5
JULY 25...	.02	.05	410	928	1.26	--	210	0	7.1	1360	8.3	21.0
SEP. 17...	.02	.02	470	949	1.29	--	210	0	7.1	1430	8.5	17.5

BIG SIOUX RIVER BASIN

06482830 BEAVER CREEK NEAR CANTON, S. DAK. (LAT 43 19 04 LONG 096 36 31)

OCT. 18...	.03	.04	350	2060	2.80	--	1500	1200	.8	2420	8.0	4.7
APR. 25...	.02	.03	200	1760	2.39	--	1300	1000	.8	2150	8.1	16.2
JUNE 21...	.01	.07	290	1950	2.65	--	1300	1100	.9	2290	8.0	18.9

BIG SIOUX RIVER NEAR HUDSON, S. DAK. (LAT 44 22 25 LONG 100 22 20)

DATE	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOLVED BORON (B) (UG/L) (01020)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (TONS PER AC-FT) (70303)	DIS-SOLVED SOLIDS (TONS PER DAY) (70302)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	SODIUM AD-SORP-TION RATIO (00931)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)
AUG., 1972 23...	.46	--	648	.88	--	420	170	.8	926	8.2	20.6
SEP. 28...	1.3	--	684	.93	--	420	190	1.0	944	7.7	13.5
OCT. 26...	1.9	--	684	.93	--	410	190	.9	956	7.9	10.6
NOV. 20...	2.0	--	840	1.14	--	490	210	1.0	1080	8.2	1.2
DEC. 20...	2.7	--	984	1.34	--	600	250	1.5	1380	7.7	.0
JAN., 1973 30...	1.5	--	604	.82	--	300	92	1.3	870	7.2	.0
FEB. 21...	2.1	--	676	.92	--	420	170	1.3	1080	7.1	.0
APR. 25...	.14	--	687	.93	--	480	240	.7	946	8.5	13.5
MAY 22...	.00	--	693	.94	--	340	100	2.0	974	8.3	19.0
JUNE 25...	.00	--	618	.84	--	350	180	1.2	897	8.0	24.0
JULY 30...	1.0	--	250	.34	--	130	31	.6	369	7.4	18.5
AUG. 27...	.00	--	721	.98	--	330	210	2.4	1130	7.7	23.5
SEP. 25...	2.0	--	822	1.12	--	470	220	1.9	1240	8.5	15.5

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

BIG SIOUX RIVER BASIN (Continued)

BIG SIOUX RIVER NEAR HUDSON, S. DAK. (LAT 44 22 25 LONG 100 22 20)--Continued

DATE	TIME	DIS-SOLVED NITRATE (N) (MG/L) (00618)	DIS-SOLVED NITRITE (N) (MG/L) (00613)	DIS-SOLVED AMMONIA NITRO-GEN (N) (MG/L) (00608)	AMMONIA NITRO-GEN (N) (MG/L) (00610)	ORGANIC NITRO-GEN (N) (MG/L) (00605)	TOTAL KJEL-DAHL NITRO-GEN (N) (MG/L) (00625)	TOTAL NITRO-GEN (N) (MG/L) (00600)	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)
AUG., 1972										
23...	0930	.46	.00	.11	--	1.9	2.0	2.5	.48	.77
SEP.										
28...	0845	1.2	.08	.00	--	1.9	1.9	3.2	.40	.72
OCT.										
26...	1605	1.8	.09	.43	--	1.9	2.3	4.2	.38	.61
NOV.										
20...	1530	2.0	.04	.87	--	1.6	2.5	4.5	.47	.75
DEC.										
20...	0955	2.7	.02	2.8	2.8	.70	3.5	6.2	1.1	1.7
JAN., 1973										
30...	1430	1.5	.03	5.5	5.4	.90	6.3	7.8	1.2	1.5
FEB.										
21...	1440	2.1	.00	--	4.5	.00	4.5	10	1.4	1.5
APR.										
25...	1415	.13	.01	--	.15	2.0	2.1	2.2	.08	.30
MAY										
22...	0940	.00	.01	--	.08	2.5	2.6	2.6	.20	.50
JUNE										
25...	0930	.00	.00	--	.13	3.5	3.6	3.6	.08	.64
JULY										
30...	0950	.97	.03	--	.57	2.5	3.1	4.2	.27	1.2
AUG.										
27...	1025	.00	.00	--	.13	5.0	5.1	5.1	.06	.07
SEP.										
25...	0950	1.8	.19	--	.43	3.0	3.4	6.0	.77	1.4

ANALYSES OF SAMPLES COLLECTED AT MISCELLANEOUS SITES

CHEMICAL ANALYSES, WATER YEAR OCTOBER 1972 TO SEPTEMBER 1973

BIG SIOUX RIVER BASIN (Continued)

BIG SIOUX RIVER NEAR HUDSON, S. DAK. (LAT 44 22 25 LONG 100 22 20)--Continued

FIELD DETERMINATIONS

DATE	TIME	DIS-CHARGE (CFS) (00060)	TEMPER-ATURE (DEG C) (00010)	AIR TEMP-ERATURE (DEG C) (00020)	DIS-SOLVED OXYGEN (MG/L) (00300)	BIO-CHEM-ICAL OXYGEN DEMAND (MG/L) (00310)	PH (UNITS) (00400)	IMME-DIATE COLI-FORM (COL. PER 100 ML) (31501)	FECAL COLI-FORM (COL. PER 100 ML) (31616)
AUG., 1972 24...	0930	--	20.6	17.0	10.2	4.1	8.0	950	305
SEP. 28...	0845	--	13.5	11.4	10.0	4.3	8.4	4000	1430
OCT. 26...	1605	--	10.6	22.0	14.6	2.7	8.5	3470	1230
NOV. 20...	1530	--	1.2	2.5	14.6	2.2	8.7	6000	593
DEC. 20...	0955	--	.0	-.4	6.2	1.9	7.9	5200	220
JAN., 1973 30...	1430	--	.0	4.0	4.2	1.8	7.7	3100	900
FEB. 21...	1440	--	.0	1.5	4.5	1.5	7.5	3470	670
MAR. 28...	1415	--	8.0	7.5	7.1	1.2	8.3	2500	2600
APR. 25...	1415	--	13.5	13.0	12.1	2.5	9.0	340	220
MAY 22...	0940	--	19.0	16.0	8.2	2.8	8.9	730	100
JUNE 25...	0930	--	24.0	26.0	5.8	2.4	8.6	4000	900
JULY 30...	0950	--	18.5	21.0	4.9	3.2	7.7	145000	69200
AUG. 27...	1025	--	23.5	28.0	9.9	3.5	8.4	7300	1380
SEP. 25...	0950	--	15.5	17.0	9.3	4.0	8.8	3100	360

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	LOCAL IDENT-I-FIER	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)
432250100214000	39N26W10AADA	72-06-22	13	60	--	110	9.7	82	22
433050102294000	41N43W19BCCC	72-06-22	33	90	--	110	7.9	430	17
443511097275901	113N55W17CDA	72-10-11	10	40	30	13	4.5	1000	6.4
443731098203000	115N63W 1DDDD	71-10-04	28	30	--	34	13	120	7.9
443731098203000	115N63W 1DDDD	72-05-15	28	20	--	42	15	110	9.0
443731098203000	115N63W 1DDDD	72-10-16	28	80	--	34	13	130	8.4
443731098203000	115N63W 1DDDD	73-05-17	27	9	--	34	13	130	8.4
443925097122201	114N53W28BBDB	72-10-11	30	40	700	110	40	24	5.6
443959096372701	114N48W19DAAB	72-10-13	30	40	150	450	170	190	13
444106097023301	114N52W14BCAA	72-10-12	--	--	--	96	30	18	2.8
444109097014601	114N52W14AACA	72-10-12	30	20	10	220	100	43	3.9
444325097015001	115N52W35DABB	72-10-12	23	10	30	90	32	17	8.0
444527096400701	115N49W23ACDC	72-10-13	29	50	--	130	45	18	4.7
444527096401301	115N49W23ACCD	72-10-13	27	80	--	140	46	30	5.3
444536097023001	115N52W23BBAA	72-10-12	--	--	--	110	43	20	3.2
444623096300001	115N47W17BBCC	72-10-12	--	--	--	99	32	6.0	3.0
444722097073701	115N53W1DDDD	72-10-11	--	--	--	76	48	9.9	2.7
444727096421101	115N49W4DDD	72-10-12	--	--	--	88	29	4.2	2.0
444924101450501	10N19E13DDD	72-05-25	24	280	20	7.3	1.6	1400	5.8
445000098225500	116N63W27AADA	71-10-04	29	370	--	340	120	62	13
445000098225500	116N63W27AADA	72-05-15	27	20	--	350	160	78	19
445000098225500	116N63W27AADA	72-10-16	30	6200	--	410	130	140	14
445000098225500	116N63W27AADA	73-05-17	26	30	--	440	210	89	13
445344098221600	116N63W28BAAA	73-05-17	28	9	--	480	120	47	8.9
445815101115001	12N24E27BCCB	72-05-10	22	6800	100	700	130	1700	6.6
445900098135000	118N61W31CCCC	71-10-05	26	20	--	350	110	350	18
445900098135000	118N61W31CCCC	72-05-15	26	40	--	300	99	360	18
445900098135000	118N61W31CCCC	72-10-16	27	420	--	310	94	370	18
445900098135000	118N61W31CCCC	73-05-17	26	9	--	320	93	370	21
450000101141501	12N24E17CBBD	72-05-10	30	590	20	380	110	64	31
450251101355701	13N21E31BDDA	72-05-11	34	50	50	400	94	110	52
450609098342700	119N64W20CCCB	73-05-17	26	9	--	220	180	400	5.2
450753100304201	14N29E36DBDD	72-05-24	16	50	130	430	110	750	65
450920098122500	118N61W6AAAA	71-10-05	29	20	--	52	18	300	8.2
450920098122500	118N61W6AAAA	72-05-16	30	40	--	52	18	330	8.2
450920098122500	118N61W6AAAA	72-10-25	28	30	--	52	16	370	8.6
450920098122500	118N61W6AAAA	73-05-17	29	180	--	53	18	330	8.4
451023098381000	120N 65W 35BBBB	71-10-05	34	20	--	70	28	60	7.4
451023098381000	120N 65W 35BBBB	72-05-16	34	20	--	68	29	66	7.7
451023098381000	120N 65W 35BBBB	72-10-27	34	10	--	60	27	56	7.9

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)
432250100214000	72-06-22	474	0	389	94	16	.4	--	--	.00	.02
433050102294000	72-06-22	344	0	282	910	25	.5	--	--	.48	.07
443511097275801	72-10-11	480	0	394	1200	440	5.8	--	--	.03	--
443731098203000	71-10-04	448	0	367	60	5.4	.5	--	--	.02	--
443731098203000	72-05-15	439	0	360	61	6.8	.5	--	--	.26	.06
443731098203000	72-10-16	447	0	367	59	8.2	.5	--	--	.27	.08
443731098203000	73-05-17	428	0	351	68	7.7	.4	--	--	.19	.06
443923097122201	72-10-11	326	0	267	160	40	.3	--	--	1.8	--
443959096372701	72-10-13	354	0	290	1900	5.4	.4	--	--	9.8	--
444106097023301	72-10-12	405	0	332	74	2.5	--	--	--	.52	--
444109097014601	72-10-12	648	0	531	170	110	--	--	--	56	--
444325097015001	72-10-12	304	0	249	120	19	.2	--	--	1.6	--
444527096400701	72-10-13	401	0	329	200	7.3	.3	--	--	1.2	--
444527096401301	72-10-13	325	0	265	140	130	.3	--	--	3.4	--
444538097023001	72-10-12	321	0	263	210	5.5	--	--	--	.01	--
444623096300001	72-10-12	402	0	330	60	1.4	--	--	--	.16	--
444722097073701	72-10-11	301	0	247	130	12	--	--	--	8.4	--
444727096421101	72-10-12	293	0	240	97	3.3	--	--	--	2.4	--
444924101450501	72-05-25	1430	0	1170	1100	570	5.2	1.7	.300	.87	--
445000098225500	71-10-04	387	0	317	1100	39	.3	--	--	.12	--
445000098225500	72-05-15	276	0	226	1400	23	.5	--	--	.55	.05
445000098225500	72-10-16	388	0	318	1300	73	.4	--	--	.03	.03
445000098225500	73-05-17	360	0	295	1900	10	.4	--	--	.11	.01
445344098221600	73-05-17	362	0	297	1400	46	.6	--	--	2.3	.01
445815101115001	72-05-10	268	0	220	2600	2300	3.4	.300	.400	.04	--
445900098135000	71-10-05	554	0	454	1500	96	.3	--	--	.09	--
445900098135000	72-05-15	557	0	457	1400	.0	.2	--	--	.54	.01
445900098135000	72-10-16	593	0	486	1300	110	.3	--	--	.08	.02
445900098135000	73-05-17	592	0	486	1400	50	.1	--	--	.09	.01
450000101141501	72-05-10	168	0	138	1300	67	3.8	.100	.009	.07	--
450251101355701	72-05-11	146	0	120	1400	120	4.0	.300	.020	.00	--
450609098342700	73-05-17	424	0	348	1700	42	.5	--	--	.64	.06
450753100304201	72-05-24	247	0	203	2400	410	3.2	2.8	.080	.40	--
450920098122500	71-10-05	620	0	509	140	150	.5	--	--	2.9	--
450920098122500	72-05-16	633	0	519	150	170	.4	--	--	.95	.14
450920098122500	72-10-25	641	0	526	160	190	.5	--	--	.50	.12
450920098122500	73-05-17	672	0	551	140	170	.3	--	--	.07	.06
451023098381000	71-10-05	366	0	300	78	21	.4	--	--	1.9	--
451023098381000	72-05-16	376	0	308	88	17	.4	--	--	3.1	.05
451023098381000	72-10-27	394	0	323	71	16	.5	--	--	2.2	.02

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)
432250100214000	72-06-22	.00	--	--	580	310	0	34	2.0
433050102294000	72-06-22	.06	--	--	1700	310	25	74	11
443511097275801	72-10-11	--	--	--	2920	51	0	97	61
443731098203000	71-10-04	.05	--	--	490	140	0	64	4.4
443731098203000	72-05-15	.04	--	--	490	170	0	57	3.7
443731098203000	72-10-16	.05	--	--	503	140	0	65	4.8
443731098203000	73-05-17	.06	--	--	501	140	0	65	4.8
443923097122201	72-10-11	--	--	--	579	440	170	10	.5
443959096372701	72-10-13	--	--	--	2980	1800	1500	18	1.9
444106097023301	72-10-12	--	--	484	--	360	31	10	.4
444109097014601	72-10-12	--	--	--	1240	960	430	9	.6
444325097015001	72-10-12	--	--	--	466	360	110	9	.4
444527096400701	72-10-13	--	--	--	633	510	180	6	.3
444527096401301	72-10-13	--	--	--	693	540	270	11	.6
444538097023001	72-10-12	--	--	612	--	450	190	9	.4
444623096300001	72-10-12	--	--	422	--	380	49	3	.1
444722097073701	72-10-11	--	--	496	--	390	140	5	.2
444727096421101	72-10-12	--	--	418	--	340	99	3	.1
444924101450501	72-05-25	--	--	4200	3860	25	0	99	122
445000098225500	71-10-04	.01	--	--	1890	1300	1000	9	.7
445000098225500	72-05-15	.01	--	--	2200	1500	1300	10	.9
445000098225500	72-10-16	.01	--	--	2290	1600	1200	16	1.5
445000098225500	73-05-17	.02	--	--	2870	2000	1700	9	.9
445344098221600	73-05-17	.02	--	--	2320	1700	1400	6	.5
445815101115001	72-05-10	--	--	--	7620	2300	2100	62	15
445900098135000	71-10-05	.02	--	--	2720	1300	870	36	4.2
445900098135000	72-05-15	.00	--	--	2480	1200	700	40	4.6
445900098135000	72-10-16	.01	--	--	2520	1200	670	40	4.7
445900098135000	73-05-17	.02	--	--	2570	1200	700	40	4.7
450000101141501	72-05-10	--	--	--	2080	1400	1300	9	.7
450251101355701	72-05-11	--	--	--	2300	1400	1300	14	1.3
450609098342700	73-05-17	.06	--	--	2790	1300	940	40	4.8
450753100304201	72-05-24	--	--	4620	4320	1500	1300	50	8.4
450920098122500	71-10-05	.21	--	--	1020	200	0	75	9.1
450920098122500	72-05-16	.10	--	--	1080	200	0	77	10
450920098122500	72-10-25	.08	--	--	1140	200	0	80	12
450920098122500	73-05-17	.05	--	--	1080	210	0	77	10
451023098381000	71-10-05	.01	--	--	487	290	0	30	1.5
451023098381000	72-05-16	.00	--	--	509	290	0	32	1.7
451023098381000	72-10-27	.02	--	--	484	280	0	30	1.5

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

COUNTY	STATION NUMBER	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	DISSOLVED BORON (B) (UG/L) (01020)
Todd	432250100214000	72-06-22	1280	7.5	11.0	140
Shannon	433050102294000	72-06-22	2340	7.8	11.0	660
Hamlin	443511097275801	72-10-11	4410	8.2	20.0	4500
Hamlin	443731098203000	71-10-04	800	7.5	8.2	590
Hamlin	443731098203000	72-05-15	794	7.3	8.4	590
Hamlin	443731098203000	72-10-16	781	7.4	8.2	600
Hamlin	443731098203000	73-05-17	787	7.7	9.3	600
Hamlin	443923097122201	72-10-11	886	7.2	10.0	130
Deuel	443959096372701	72-10-13	3280	7.4	--	830
Hamlin	444106097023301	72-10-12	715	7.4	10.0	90
Hamlin	444109097014601	72-10-12	1890	7.2	--	210
Hamlin	444325097015001	72-10-12	743	7.6	--	150
Deuel	444527096400701	72-10-13	939	7.3	10.0	100
Deuel	444527096401301	72-10-13	1160	7.4	10.0	70
Hamlin	444538097023001	72-10-12	864	7.4	10.0	80
Deuel	444623096300001	72-10-12	689	7.4	10.8	60
Hamlin	444722097073701	72-10-11	759	7.7	10.0	70
Deuel	444727096421101	72-10-12	633	7.6	15.0	30
Ziebach	444924101450501	72-05-25	5670	8.0	40.0	31000
Spink	445000098225500	71-10-04	2300	7.2	8.2	180
Spink	445000098225500	72-05-15	2540	7.4	7.0	260
Spink	445000098225500	72-10-16	2570	7.2	8.2	200
Spink	445000098225500	73-05-17	2970	7.2	7.9	300
Spink	445344098221600	73-05-17	2580	7.2	9.0	230
Ziebach	445815101115001	72-05-10	10500	6.8	40.0	2100
Spink	445900098135000	71-10-05	3350	7.3	8.2	500
Spink	445900098135000	72-05-15	3200	7.1	8.0	560
Spink	445900098135000	72-10-16	2920	7.4	8.0	490
Spink	445900098135000	73-05-17	3150	7.2	8.1	530
Ziebach	450000101141501	72-05-10	2440	7.2	55.5	340
Ziebach	450251101355701	72-05-11	2671	7.8	58.0	580
Spink	450609098342700	73-05-17	3210	7.4	8.0	820
Dewey	450753100304201	72-05-24	5310	6.7	31.5	2100
Spink	450920098122500	71-10-05	1760	7.2	8.0	90
Spink	450920098122500	72-05-16	1780	7.4	8.0	1000
Spink	450920098122500	72-10-25	1850	7.6	8.0	1000
Spink	450920098122500	73-05-17	1760	7.5	8.0	1000
Spink	451023098381000	71-10-05	768	7.5	8.5	200
Spink	451023098381000	72-05-16	798	7.5	8.5	230
Spink	451023098381000	72-10-27	785	7.6	8.4	240

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	BRO-IDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)
451023098381000	73-05-17	378	0	310	100	24	.4	--	--	2.0	.01
451200098240002	71-10-01	412	0	338	1500	180	.6	--	--	.04	--
451200098240002	71-10-05	412	0	338	1500	180	.6	--	--	.04	.02
451200098240002	72-05-16	435	0	357	2300	270	.5	--	--	.03	.06
451200098240002	72-10-25	471	0	386	2000	250	.7	--	--	.01	.03
451200098240002	73-05-17	469	0	385	2400	260	.5	--	--	.03	.01
451400100252801	72-05-24	345	0	283	1400	280	4.6	.500	.100	.04	--
451431098061000	71-10-05	943	0	773	4400	150	.8	--	--	5.8	--
451431098061000	72-06-26	1030	0	845	4600	170	1.0	--	--	3.9	.04
451431098061000	72-10-25	1160	0	951	4200	150	1.3	--	--	4.9	.07
451431098061000	73-05-15	1140	0	935	4300	160	.8	--	--	7.1	.06
451435098333000	72-05-01	617	--	506	76	1400	.7	--	--	.02	.05
451436098233200	71-10-14	325	0	267	330	200	.2	--	--	.04	--
451436098233200	72-06-27	380	0	312	300	210	.3	--	--	.05	.05
451436098233200	72-10-25	377	0	309	330	210	.4	--	--	.04	.03
451436098233200	73-05-16	384	0	315	330	200	.0	--	--	.01	.02
451436098394500	72-06-27	366	0	300	280	170	.2	--	--	.04	.05
451619100531101	72-05-25	636	0	522	7.4	3500	.8	15	3.3	6.3	--
451759098333500	71-10-14	558	0	458	360	240	.2	--	--	.02	--
451759098333500	72-04-20	548	0	449	340	280	.3	--	--	1.7	.06
451759098333500	72-04-20	582	0	477	400	260	.3	--	--	.05	.05
451759098333500	72-10-26	557	0	457	350	240	.4	--	--	.38	.03
451759098333500	73-05-16	581	0	477	350	260	.1	--	--	.93	.03
451802098183002	71-10-14	370	0	303	90	15	.1	--	--	.01	--
451802098183002	72-06-26	340	0	279	95	12	.1	--	--	.10	.04
451802098183002	72-10-26	339	0	278	100	14	.3	--	--	.01	.02
451802098183002	73-05-16	329	0	270	110	15	.1	--	--	.07	.03
451941099175000	72-06-16	182	0	149	1300	56	3.2	.300	.030	.06	--
451947098355504	71-10-14	373	0	306	900	93	.1	--	--	.01	--
451947098355504	72-06-27	334	0	274	2200	71	.3	--	--	.14	.05
451947098355504	72-10-27	354	0	290	1400	55	.4	--	--	.21	.02
451947098355504	73-05-16	375	0	308	1200	59	.1	--	--	.00	.02
452144098145100	72-04-20	167	0	137	1300	84	1.3	--	--	.00	--
452312098210400	71-10-14	724	0	594	300	530	.2	--	--	.10	--
452312098210400	72-06-26	910	0	746	290	500	.2	--	--	.13	.06
452312098210400	72-10-26	890	0	730	300	530	.3	--	--	.71	.08
452312098210400	73-05-16	924	0	758	310	520	.0	--	--	.04	.08
452312098283002	71-10-14	578	0	474	260	850	.4	--	--	.02	--
452312098283002	72-06-27	626	0	513	150	910	.4	--	--	.08	.10
452312098283002	72-10-26	605	0	496	130	920	.5	--	--	.03	.07

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORTHO, PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)
451023098381000	73-05-17	.02	--	--	523	310	1	29	1.5
451200098240002	71-10-01	.02	--	--	2600	1600	1300	22	2.3
451200098240002	71-10-05	--	--	--	2640	1600	1300	22	2.3
451200098240002	72-05-16	.00	--	--	3030	2400	2100	17	2.1
451200098240002	72-10-25	.01	--	--	3490	2400	2000	17	2.1
451200098240002	73-05-17	.03	--	--	4000	2700	2300	16	1.9
451400100252001	72-05-24	--	--	2940	2800	390	110	79	17
451431098061000	71-10-05	.05	--	--	7310	1700	950	68	18
451431098061000	72-06-26	.03	--	--	7600	2100	1300	66	16
451431098061000	72-10-25	.02	--	--	7260	1800	800	67	17
451431098061000	73-05-15	.08	--	--	7420	1700	770	69	19
451435098333000	72-05-01	.02	--	--	2900	220	0	90	29
451436098233200	71-10-14	.06	--	--	1000	410	140	50	4.3
451436098233200	72-06-27	.01	--	--	1100	430	120	49	4.2
451436098233200	72-10-25	.02	--	--	1150	460	160	48	4.2
451436098233200	73-05-16	.02	--	--	1120	460	150	46	3.9
451436098394500	72-06-27	.00	--	--	908	500	200	35	2.5
451619100531101	72-05-25	--	--	5780	6340	120	0	97	98
451759098333500	71-10-14	.04	--	--	1470	430	0	65	8.2
451759098333500	72-04-20	.14	--	--	1390	290	0	74	10
451759098333500	72-04-20	.15	--	--	1540	260	0	70	12
451759098333500	72-10-26	.01	--	--	1410	290	0	74	10
451759098333500	73-05-16	.03	--	--	1460	270	0	77	11
451802098183002	71-10-14	.06	--	--	456	380	76	4	.2
451802098183002	72-06-26	.04	--	--	437	360	83	5	.2
451802098183002	72-10-26	.01	--	--	441	370	93	4	.2
451802098183002	73-05-16	.03	--	--	450	370	96	4	.2
451941099175000	72-06-16	.00	--	2240	2060	1300	1200	15	1.3
451947098355504	71-10-14	.03	--	--	1600	1300	950	6	.6
451947098355504	72-06-27	.00	--	--	3300	2400	2100	7	.7
451947098355504	72-10-27	.02	--	--	2300	1600	1400	7	.7
451947098355504	73-05-16	.02	--	--	2060	1500	1200	6	.7
452144098145100	72-04-20	.00	.04	--	2140	500	440	60	7.6
452312098210400	71-10-14	.06	--	--	2090	360	0	81	17
452312098210400	72-06-26	.06	--	--	2020	220	0	86	19
452312098210400	72-10-26	.03	--	--	2120	230	0	86	21
452312098210400	73-05-16	.08	--	--	2180	230	0	87	22
452312098283002	71-10-14	.00	--	--	2310	370	0	80	17
452312098283002	72-06-27	.04	--	--	2240	340	0	81	17
452312098283002	72-10-26	.04	--	--	2250	330	0	82	18

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

COUNTY	STATION NUMBER	DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	DISSOLVED BORON (B) (UG/L) (01020)
Spink	451023098381000	73-05-17	810	7.5	8.7	200
Spink	451200098240002	71-10-01	3460	7.2	8.1	470
Spink	451200098240002	71-10-05	3460	7.2	8.1	470
Spink	451200098240002	72-05-16	4470	7.3	7.9	590
Spink	451200098240002	72-10-25	4030	7.6	9.4	720
Spink	451200098240002	73-05-17	4280	7.2	7.5	520
Dewey	451400100252801	72-05-24	3930	7.0	20.5	2000
Brown	451431098061000	71-10-05	8200	7.3	8.2	1000
Brown	451431098061000	72-06-26	8880	7.4	7.7	1000
Brown	451431098061000	72-10-25	8290	7.6	8.6	1200
Brown	451431098061000	73-05-15	8460	7.2	6.3	1200
Brown	451435098333000	72-05-01	5200	7.9	--	3900
Brown	451436098233200	71-10-14	1730	7.6	8.7	880
Brown	451436098233200	72-06-27	1750	7.9	8.2	990
Brown	451436098233200	72-10-25	1770	7.6	8.3	1000
Brown	451436098233200	73-05-16	1690	7.2	8.5	960
Brown	451436098394500	72-06-27	1530	7.4	8.2	830
Dewey	451619100531101	72-05-25	11300	7.8	29.5	7500
Brown	451759098333500	71-10-14	2230	7.2	7.8	900
Brown	451759098333500	72-04-20	2160	7.4	8.0	900
Brown	451759098333500	72-04-20	2400	7.9	8.0	1000
Brown	451759098333500	72-10-26	2260	7.4	7.8	910
Brown	451759098333500	73-05-16	2310	7.0	7.9	1000
Brown	451802098183002	71-10-14	2210	7.1	8.0	150
Brown	451802098183002	72-06-26	679	7.6	8.0	130
Brown	451802098183002	72-10-26	756	7.4	8.0	350
Brown	451802098183002	73-05-16	707	7.5	8.2	90
Brown	451941099175000	72-06-16	2430	7.1	23.0	270
Brown	451947098355504	71-10-14	2200	7.2	8.5	70
Brown	451947098355504	72-06-27	3560	7.2	8.0	170
Brown	451947098355504	72-10-27	2690	7.4	8.4	120
Brown	451947098355504	73-05-16	2390	7.0	8.5	110
Brown	452140098145100	72-04-20	2770	7.5	14.5	910
Brown	452312098210400	71-10-14	3440	7.2	8.0	2300
Brown	452312098210400	72-06-26	3330	7.7	8.0	2200
Brown	452312098210400	72-10-26	3380	7.5	8.3	2300
Brown	452312098210400	73-05-16	3190	7.2	8.2	2300
Brown	452312098283002	71-10-14	3870	7.5	8.0	2000
Brown	452312098283002	72-06-27	3860	7.6	8.0	2300
Brown	452312098283002	72-10-26	3890	7.6	8.0	1900

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	LOCAL IDENT-I-FIER	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)
452312098283002	122N64W13AAAA2	73-05-16	27	9	--	87	28	720	19
452412099274300	122N72W12AAAA	71-07-02	--	480	--	110	20	480	--
452456098233100	123N63W34DDDD, QW 23	71-10-08	30	20	--	210	57	230	23
452456098233100	123N63W34DDDD, QW 23	72-06-26	30	70	--	250	64	230	14
452456098233100	123N63W34DDDD, QW 23	72-10-26	29	30	--	240	64	230	15
452456098233100	123N63W34DDDD, QW 23	73-05-16	29	9	--	220	55	230	14
452630099384900	123N73W28ADDD1	72-09-20	49	50	30	67	29	33	14
452643098264600	123N63W20CDDA	71-10-13	9.8	140	--	56	23	2000	21
452726098330100	123N64W21BACC	72-06-20	9.9	970	--	220	65	300	32
452915098271500	123N63W8BBBB, QW 22	71-10-13	28	20	--	160	99	390	15
452915098271500	123N63W8BBBB, QW 22	72-06-26	28	200	--	230	140	400	12
452915098271500	123N63W8BBBB, QW 22	72-10-26	28	40	--	230	140	390	13
452915098271500	123N63W8BBBB, QW 22	73-05-16	28	30	--	210	130	420	5.9
453156099334300	124N72W29BBCD	72-06-14	28	4600	320	100	41	310	15
453428098194202	124N62W8DBBB2	71-10-07	28	20	--	61	21	8.1	6.0
453428098194202	124N62W8DBBB2	72-06-26	27	40	--	69	23	6.0	6.6
453428098194202	124N62W8DBBB2	72-10-26	27	10	--	65	23	6.8	6.5
453428098194202	124N62W8DBBB2	73-05-16	27	0	--	78	25	7.2	8.0
453608099260500	125N71W32ABCD	71-06-29	--	10	--	38	18	290	--
453636099403900	125N73W29DDAD	71-06-28	--	440	--	26	8.4	1000	--
453657099295600	125N72W26ACBD	71-07-01	--	800	--	33	9.4	350	--
453705098183000	125N62W21CCCC	72-06-23	29	760	--	54	18	380	18
453800098222000	125N63W13CCCC	71-10-07	27	20	--	400	390	1200	21
453800098222000	125N63W13CCCC	72-06-23	25	40	--	330	390	1200	26
453800098222000	125N63W13CCCC	72-10-26	26	20	--	390	340	1300	28
453800098222000	125N63W13CCCC	73-05-16	25	90	--	380	360	1300	27
453806099321000	125N72W21AABD	71-06-16	--	40	--	18	2.8	400	--
453817100310601	19N29E 2CABC	72-05-25	12	20	0	27	16	2700	13
453846099254200	125N71W17AADC	71-06-23	--	500	--	74	16	1100	--
453850098421700	125N65W18AAA	72-04-18	12	3300	70	120	39	470	25
453915099062500	125N66W12DBCB	71-06-24	--	5600	--	140	34	1700	--
453932099265700	125N71W7ADAC	71-06-29	--	2500	--	55	15	230	--
453936099331100	125N72W8ADAA	71-07-01	--	1000	--	19	5.1	430	--
454312099150100	126N70W23ABCA	71-06-17	--	1100	--	250	67	150	--
454338099254700	126N71W17DACA	71-06-17	--	660	--	70	27	160	--
454346099081900	126N69W14BCCC	72-08-03	28	20	1200	310	140	150	12
454409099324300	126N72W16BABD	71-06-17	--	20	--	140	69	120	--
454426098372400	126N65W11DA1	72-08-18	11	3200	--	210	63	320	28
454426099075000	126N69W11CADC	71-06-02	--	20	--	400	200	370	--
454426099080900	126N69W11CBDC	71-06-02	--	--	--	300	61	240	--

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)
452312098283002	73-05-16	622	0	510	110	930	.2	--	--	.01	.07
452412099274300	71-07-02	486	0	399	110	560	--	--	--	1.7	--
452456098233100	71-10-08	435	0	357	800	97	.2	--	--	.03	--
452456098233100	72-06-26	432	0	354	880	98	.1	--	--	.04	.01
452456098233100	72-10-26	423	0	347	840	98	.3	--	--	.22	.03
452456098233100	73-05-16	443	0	363	780	100	.0	--	--	.08	.02
452630099384900	72-09-28	356	0	292	79	4.7	1.2	.070	.040	.20	--
452643098264600	71-10-13	644	0	528	25	2800	.5	--	--	.01	--
452726098330100	72-04-20	180	0	148	1300	60	1.7	--	--	.00	.03
452915098271500	71-10-13	703	0	577	850	170	.4	--	--	.14	--
452915098271500	72-06-26	792	0	650	1100	150	.5	--	--	.01	.02
452915098271500	72-10-26	782	0	641	1100	170	.8	--	--	.03	.03
452915098271500	73-05-16	767	0	629	1100	150	.5	--	--	.04	.04
453156099334300	72-06-14	1070	0	878	12	140	.5	.400	.100	.05	--
453428098194202	71-10-07	289	0	237	13	3.3	.3	--	--	.04	--
453428098194202	72-06-26	330	0	271	15	4.2	.2	--	--	.28	.18
453428098194202	72-10-26	309	0	253	25	4.8	.4	--	--	.25	.19
453428098194202	73-05-16	349	0	286	16	4.0	.2	--	--	1.9	.18
453608099260500	71-06-29	517	0	424	180	160	--	--	--	1.5	--
453636099403900	71-06-28	590	0	484	17	1200	--	--	--	.02	--
453657099295600	71-07-01	569	0	467	240	110	--	--	--	2.8	--
453705098183000	72-06-23	213	0	175	7.8	970	.3	--	--	.04	.05
453800098222000	71-10-07	433	0	355	4100	660	.9	--	--	.04	--
453800098222000	72-06-23	464	0	381	4000	590	.6	--	--	.13	.05
453800098222000	72-10-26	423	0	347	3700	750	.8	--	--	.39	.05
453800098222000	73-05-16	440	0	361	3900	670	.4	--	--	.58	.04
453806099321000	71-06-16	710	0	582	99	180	--	--	--	1.9	--
453817100310601	72-05-25	557	0	457	18	3900	.7	14	3.5	.02	--
453846099254200	71-06-23	610	0	500	94	1500	--	--	--	.03	--
453850098421700	72-04-18	201	0	165	1200	78	1.9	--	--	.03	--
453915099062500	71-06-24	549	0	450	26	2800	--	--	--	.08	--
453932099265700	71-06-29	404	0	331	340	27	--	--	--	.04	--
453936099331100	71-07-01	386	0	317	15	310	--	--	--	.04	--
454312099150100	71-06-17	296	0	243	900	15	--	--	--	.06	--
454338099254700	71-06-17	498	0	408	94	58	--	--	--	.47	--
454346099081900	72-08-03	378	0	310	970	130	.5	--	--	37	.02
454409099324300	71-06-17	455	0	373	360	43	--	--	--	17	--
454426098372400	72-04-18	183	0	150	1300	55	2.3	--	--	.00	.05
454426099075000	71-06-02	326	0	267	1800	500	--	--	--	8.0	--
454426099080900	71-06-02	282	0	231	1100	100	--	--	--	--	--

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)
452312098283002	73-05-16	.07	--	--	2230	320	0	82	18
452412099274300	71-07-02	--	--	1520	--	360	0	--	10
452456098233100	71-10-08	.04	--	--	1650	760	400	39	3.6
452456098233100	72-06-26	.01	--	--	1780	890	530	36	3.4
452456098233100	72-10-26	.01	--	--	1730	860	520	36	3.4
452456098233100	73-05-16	.02	--	--	1650	780	410	39	3.6
452630099384900	72-09-28	.04	--	506	454	290	0	19	.8
452643098264600	71-10-13	.05	--	--	5260	230	0	94	57
452726098330100	72-04-20	.02	--	--	2080	820	670	43	4.6
452915098271500	71-10-13	.00	--	--	2060	810	230	51	6.0
452915098271500	72-06-26	.02	--	--	2450	1200	500	43	5.1
452915098271500	72-10-26	.03	--	--	2460	1200	510	42	5.0
452915098271500	73-05-16	.03	--	--	2420	1100	430	46	5.6
453156099334300	72-06-14	.00	--	1260	1180	420	0	61	6.6
453428098194202	71-10-07	.15	--	--	284	240	2	7	.2
453428098194202	72-06-26	.16	--	--	315	270	0	5	.2
453428098194202	72-10-26	.18	--	--	312	260	4	5	.2
453428098194202	73-05-16	.15	--	--	342	290	1	5	.2
453608099260500	71-06-29	--	--	1020	--	220	0	--	8.5
453636099403900	71-06-28	--	--	2870	--	99	0	--	44
453657099295600	71-07-01	--	--	1078	--	120	0	--	14
453705098183000	72-06-23	.05	--	--	1780	210	34	85	17
453800098222000	71-10-07	.04	--	--	7010	2600	2200	50	10
453800098222000	72-06-23	.05	--	--	6790	2400	2000	51	11
453800098222000	72-10-26	.03	--	--	6750	2400	2000	54	12
453800098222000	73-05-16	.04	--	--	6880	2400	2100	53	11
453806099321000	71-06-16	--	--	1060	--	36	0	--	29
453817100310601	72-05-25	--	--	7100	6990	130	0	98	102
453846099254200	71-06-23	--	--	3400	--	250	0	--	30
453850098421700	72-04-18	.02	.05	--	2050	460	300	68	9.5
453915099062500	71-06-24	--	--	5220	--	490	39	--	33
453932099265700	71-06-29	--	--	928	--	200	0	--	7.1
453936099331100	71-07-01	--	--	1200	--	68	0	--	23
454312099150100	71-06-17	--	--	1610	--	820	570	--	2.3
454338099254700	71-06-17	--	--	654	--	290	0	--	4.1
454346099081900	72-08-03	.01	--	--	2090	1400	1000	19	1.8
454409099324300	71-06-17	--	--	1090	--	630	260	--	2.1
454426098372400	72-04-18	.00	--	--	2080	780	630	46	5.0
454426099075000	71-06-02	--	--	6420	--	2000	1800	--	3.6
454426099080900	71-06-02	--	--	2120	--	1000	770	--	3.3

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

COUNTY	STATION NUMBER	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED BORON (B) (UG/L) (01020)
Brown	452312098283002	73-05-16	3640	7.4	8.1	1900
Edmunds	452412099274300	71-07-02	2600	7.6	--	--
Brown	452456098233100	71-10-08	2230	7.3	8.0	730
Brown	452456098233100	72-06-26	2370	7.4	8.0	790
Brown	452456098233100	72-10-26	2320	7.4	7.9	800
Brown	452456098233100	73-05-16	2120	7.3	8.0	800
Edmunds	452630099384900	72-09-28	684	8.2	10.0	180
Brown	452643098264600	71-10-13	9510	7.6	9.5	4000
Brown	452726098330100	72-04-20	2580	7.7	20.0	780
Brown	452915098271500	71-10-13	2830	7.3	8.2	440
Brown	452915098271500	72-06-26	3320	7.5	8.0	380
Brown	452915098271500	72-10-26	3300	7.2	8.0	390
Brown	452915098271500	73-05-16	3130	7.3	8.3	330
Edmunds	453156099334300	72-06-14	2020	7.3	10.5	410
Brown	453428098194202	71-10-07	458	7.6	8.0	30
Brown	453428098194202	72-06-26	515	7.9	7.7	40
Brown	453428098194202	72-10-26	575	7.6	8.0	40
Brown	453428098194202	73-05-16	561	7.7	7.5	50
McPherson	453608099260500	71-06-29	1590	7.8	--	--
McPherson	453636099403900	71-06-28	4890	7.8	--	--
McPherson	453657099295600	71-07-01	1650	7.9	--	--
Brown	453705098183000	72-06-23	3400	7.9	10.0	1700
Brown	453800098222000	71-10-07	8760	7.2	7.1	710
Brown	453800098222000	72-06-23	8150	7.5	7.0	780
Brown	453800098222000	72-10-26	7780	7.4	7.0	810
Brown	453800098222000	73-05-16	8050	7.2	7.2	780
McPherson	453806099321000	71-06-16	1720	8.1	9.0	--
Corson	453817100310601	72-05-25	12400	7.3	--	5600
McPherson	453846099254200	71-06-23	5500	7.7	10.0	--
Brown	453850098421700	72-04-18	2780	7.6	16.0	1300
McPherson	453915099062500	71-06-24	8930	7.6	9.5	--
McPherson	453932099265700	71-06-29	1350	7.8	--	--
McPherson	453936099331100	71-07-01	2000	7.9	--	--
McPherson	454312099150100	71-06-17	1920	7.6	7.5	--
McPherson	454338099254700	71-06-17	1090	7.8	8.0	--
McPherson	454346099081900	72-08-03	2680	7.3	9.0	740
McPherson	454409099324300	71-06-17	1460	7.6	8.0	--
Brown	454426098372400	72-04-18	2610	7.4	20.0	690
McPherson	454426099075000	71-06-02	4530	7.7	--	--
McPherson	454426099080900	71-06-02	2490	7.7	--	--

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	LOCAL IDENT-I-FIER	DATE OF SAMPLE	DIS-SOLVED SILICA (SIO2) (MG/L) (00955)	DIS-SOLVED IRON (FE) (UG/L) (01046)	DIS-SOLVED MAN-GANESE (MN) (UG/L) (01056)	DIS-SOLVED CAL-CIUM (CA) (MG/L) (00915)	DIS-SOLVED MAG-NE-SIUM (MG) (MG/L) (00925)	DIS-SOLVED SODIUM (NA) (MG/L) (00930)	DIS-SOLVED PO-TAS-SIUM (K) (MG/L) (00935)
454431098271300	124N63W5CCCC, QW 25	71-10-07	26	20	--	73	28	34	4.6
454431098271300	124N63W5CCCC, QW 25	72-04-20	28	400	--	92	25	27	4.6
454431098271300	124N63W5CCCC, QW 25	72-04-20	28	160	--	93	27	27	4.7
454431098271300	124N63W5CCCC, QW 25	72-10-26	27	30	--	93	26	22	4.0
454431098271300	124N63W5CCCC, QW 25	73-05-15	26	20	--	86	26	24	4.2
454543097550000	126N59W 4AAAA	72-04-19	28	20	--	140	55	680	18
454549099164200	126N70W38BDA	71-06-17	--	220	--	31	9.6	250	--
454552099253300	126N71W4BBBC	71-06-17	--	80	--	210	150	160	--
454555099203700	126N70W6BBBB	71-06-17	--	70	--	270	110	260	--
454618098163100	127N62W34ACD	72-04-20	8.7	320	20	12	3.1	890	12
454727097511100	127N58W30BBBB	72-04-19	31	280	--	130	37	440	17
454806099174600	127N70W21CABA	72-09-27	28	30	--	280	130	230	14
454933099375000	127N73W11CCDD	72-09-27	29	100	--	39	11	370	9.4
454946099035300	127N66W8DBBD	72-08-03	28	140	1400	90	23	260	10
455024099160000	127N70W3DDCB	72-09-27	29	130	770	62	14	350	12
455032098182700	127N62W 4DAA	72-04-18	9.9	230	--	23	4.2	740	9.2
455049097433600	127N57W7CCC	72-04-19	36	5000	--	94	26	39	8.8
455050097133700	128N52W30BBBB	72-06-21	24	100	--	210	310	210	11
455058099184900	127N70W5ACBB	72-09-27	30	20	--	100	45	21	15
455115099112800	128N69W32DCCB	72-09-27	29	50	--	120	38	28	8.4
455222097450900	128N58W26ADD	72-04-19	28	8000	--	120	34	13	6.7
455247098155600	128N62W23CCDC	72-04-18	9.2	160	--	31	5.9	710	12
455315098342500	128N64W20BDCC	72-04-18	11	3000	--	200	60	330	31
455427098114900	128N61W17BAAA	72-06-21	31	1600	--	44	12	1100	14
455513098221600	128N63W12BBC	72-04-18	9.7	580	--	66	18	590	22
455553099074600	128N69W 2CAAD1	72-08-03	28	540	1900	100	25	83	9.7
455608097434700	128N58W 1AAAA	72-04-19	28	60	--	230	64	120	16

STATION NUMBER	DATE OF SAMPLE	BICAR-BONATE (HCO3) (MG/L) (00440)	CAR-BONATE (CO3) (MG/L) (00445)	ALKA-LINITY AS CACO3 (MG/L) (00410)	DIS-SOLVED SULFATE (SO4) (MG/L) (00945)	DIS-SOLVED CHLO-RIDE (CL) (MG/L) (00940)	DIS-SOLVED FLUO-RIDE (F) (MG/L) (00950)	BROMIDE (BR) (MG/L) (71870)	IODIDE (I) (MG/L) (71865)	DIS-SOLVED NITRITE PLUS NITRATE (N) (MG/L) (00631)	DIS-SOL-VED-PHOS-PHORUS (P) (MG/L) (00666)
454431098271300	71-10-07	358	0	294	99	26	.3	--	--	.06	--
454431098271300	72-04-20	345	0	283	79	30	.2	--	--	.03	.04
454431098271300	72-04-20	348	0	285	82	32	.2	--	--	.02	.09
454431098271300	72-10-26	345	0	283	79	27	.3	--	--	.04	.02
454431098271300	73-05-15	342	0	281	86	20	.1	--	--	.02	.01
454543097550000	72-04-19	721	0	591	1300	160	.6	--	--	.04	.02
454549099164200	71-06-17	448	0	367	160	110	--	--	--	1.4	--
454552099253300	71-06-17	434	0	356	830	130	--	--	--	26	--
454555099203700	71-06-17	412	0	338	1100	31	--	--	--	17	--
454618098163100	72-04-20	538	0	441	600	620	6.1	--	--	.09	--
454727097511100	72-04-19	815	0	668	440	240	.5	--	--	.03	.06
454806099174600	72-09-27	355	0	291	1300	93	.4	--	--	4.8	--
454933099375000	72-09-27	751	0	616	280	55	.5	--	--	.00	--
454946099035300	72-08-03	515	0	422	420	55	.3	--	--	.12	.03
455024099160000	72-09-27	363	0	298	510	130	.4	.200	.200	.27	--
455032098182700	72-04-18	225	0	185	1300	110	3.1	--	--	.03	.01
455049097433600	72-04-19	372	0	305	130	6.8	.2	--	--	.04	.20
455050097133700	72-06-21	469	0	385	1700	82	.5	--	--	17	.07
455058099184900	72-09-27	356	0	292	79	45	.2	--	--	20	--
455115099112800	72-09-27	359	0	294	190	13	.5	--	--	3.1	--
455222097450900	72-04-19	379	0	311	160	2.2	.3	--	--	.00	.03
455247098155600	72-04-18	223	0	183	1300	120	1.9	--	--	.00	.03
455315098342500	72-04-18	183	0	150	1300	60	2.3	--	--	.00	.04
455427098114900	72-06-21	669	0	549	7.8	1500	1.4	--	--	.04	.19
455513098221600	72-04-18	194	0	159	1200	76	1.7	--	--	.00	.04
455553099074600	72-08-03	232	0	190	290	51	.3	--	--	.45	.01
455608097434700	72-04-19	545	0	447	640	22	.2	--	--	.01	.02

MISCELLANEOUS ANALYSES OF GROUND WATER IN SOUTH DAKOTA

CHEMICAL ANALYSES, OCTOBER 1971 TO SEPTEMBER 1973

STATION NUMBER	DATE OF SAMPLE	DIS-SOLVED ORTHO. PHOS-PHORUS (P) (MG/L) (00671)	TOTAL PHOS-PHORUS (P) (MG/L) (00665)	DIS-SOLVED SOLIDS (RESI-DUE AT 180 C) (MG/L) (70300)	DIS-SOLVED SOLIDS (SUM OF CONSTI-TUENTS) (MG/L) (70301)	HARD-NESS (CA,MG) (MG/L) (00900)	NON-CAR-BONATE HARD-NESS (MG/L) (00902)	PERCENT SODIUM (00932)	SODIUM AD-SORP-TION RATIO (00931)
454431098271300	71-10-07	.01	--	--	467	300	4	20	.9
454431098271300	72-04-20	.03	--	--	456	330	50	15	.6
454431098271300	72-04-20	.01	--	--	465	340	58	14	.6
454431098271300	72-10-26	.02	--	--	449	340	56	12	.5
454431098271300	73-05-15	.03	--	--	441	320	41	14	.6
454543097550000	72-04-19	.02	--	--	2740	580	0	71	12
454549099164200	71-06-17	--	--	844	--	120	0	--	10
454552099253300	71-06-17	--	--	1940	--	1100	790	--	2.1
454555099203700	71-06-17	--	--	2200	--	1100	790	--	3.4
454618098163100	72-04-20	.03	.03	--	2420	43	0	97	59
454727097511100	72-04-19	.06	--	--	1740	480	0	66	8.8
454806099174600	72-09-27	.04	--	--	2270	1200	940	29	2.8
454933099375000	72-09-27	.07	--	--	1160	140	0	84	13
454946099035300	72-08-03	.02	--	--	1140	320	0	63	6.3
455024099160000	72-09-27	.07	--	1260	1290	210	0	77	10
455032098182700	72-04-18	.01	--	--	2310	75	0	95	37
455049097433600	72-04-19	.01	--	--	529	340	37	19	.9
455050097133700	72-06-21	.01	--	--	2850	1800	1400	20	2.2
455058099184900	72-09-27	.05	--	--	599	430	140	9	.4
455115099112800	72-09-27	.02	--	--	617	460	160	12	.6
455222097450900	72-04-19	.03	--	--	559	440	130	6	.3
455247098155600	72-04-18	.01	--	--	2300	100	0	93	31
455315098342500	72-04-18	.00	--	--	2090	750	600	48	5.3
455427098114900	72-06-21	.05	--	--	3040	160	0	93	38
455513098221600	72-04-18	.00	--	--	2080	240	80	83	17
455553099074600	72-08-03	.01	--	--	706	350	160	33	1.9
455608097434700	72-04-19	.02	--	--	1390	840	390	23	1.8

COUNTY	STATION NUMBER	DATE OF SAMPLE	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS) (00095)	PH (UNITS) (00400)	TEMPER-ATURE (DEG C) (00010)	DIS-SOLVED BORON (B) (UG/L) (01020)
Brown	454431098271300	71-10-07	796	7.5	7.5	70
Brown	454431098271300	72-04-20	732	7.3	7.9	60
Brown	454431098271300	72-04-20	748	7.7	7.9	70
Brown	454431098271300	72-10-26	718	7.4	7.5	500
Brown	454431098271300	73-05-15	709	7.0	7.5	80
Marshall	454543097550000	72-04-19	3590	7.3	8.1	2
McPherson	454549099164200	71-06-17	1340	8.0	7.5	--
McPherson	454552099253300	71-06-17	2450	7.9	7.0	--
McPherson	454555099203700	71-06-17	2710	7.5	7.5	--
Brown	454618098163100	72-04-20	3860	8.1	15.0	3
Marshall	454727097511100	72-04-19	2620	7.3	7.0	1
McPherson	454806099174600	72-09-27	2780	7.4	9.0	870
McPherson	454933099375000	72-09-27	1790	7.2	10.0	910
McPherson	454946099035300	72-08-03	1690	7.3	9.5	970
McPherson	455024099160000	72-09-27	1920	7.5	9.5	780
Brown	455032098182700	72-04-18	3280	8.1	16.0	1
Marshall	455049097433600	72-04-19	776	7.2	--	390
Roberts	455050097133700	72-06-21	3140	7.4	8.0	260
McPherson	455058099184900	72-09-27	967	7.5	11.5	100
McPherson	455115099112800	72-09-27	947	7.3	9.5	180
Marshall	455222097450900	72-04-19	821	7.2	--	140
Brown	455247098155600	72-04-18	3280	8.0	18.5	1400
Brown	455315098342500	72-04-18	2650	7.4	21.0	750
Brown	455427098114900	72-06-21	5690	7.6	10.0	3400
Brown	455513098221600	72-04-18	2960	7.8	17.0	1000
McPherson	455553099074600	72-08-03	1030	7.3	9.0	540
Marshall	455608097434700	72-04-19	1860	7.2	8.0	600

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